Description for Universal Receiver

Type UE 12

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Radio Service

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Description of the UNIVERSAL-RECEIVER UE 12

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C A U T I O N

The voltage selector switch S 19 is incorporated in the receiver and serves for switching over of resistors in order to match the receiver to the supply voltages at times. Only at operation on an A.C. mains via the transformer housed in the receiver cabinet the switch must be placed to the position marked with ~ . Switching has to be done by means of a screw driver.

1. General

The HAGENUK type UE 12 is a high-class general-purpose communication receiver especially designed to meet the requirements of the shipboard service. With its eleven frequency ranges the receiver covers a total from 95 kc/s to 28 Mc/s allowing the reception of CW, MCW and radiotelephony emissions. Special provision is made for direct reception of the 500 kc/s distress frequency in one position of the bandwidth-switch independently of the frequency tuned on the dial.
When operated in conjunction with a D.F. adapter the set can also be used as a Direction Finder. Reception of low frequencies is possible by use of an additional converter.
An incorporated calibration oscillator permits to calibrate every 100 kc/s point of the dial for the whole frequency range. An auxiliary dial enables pre-tuning of all frequencies in the H.F. and in the R.T. frequency range with high accuracy. Crystal-controlled operation of the first mixer is provided for cases where an especially high grade of frequency constancy is required.

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The set is designed for operation on single conversion in the LF- and MF-bands (11/12 circuits) but double conversion is provided for operation on the R.T.- and H.F.-bands (14/15 circuits). In its technical and operational characteristics the set complies fully with all the requirements for modern marine wireless equipment.

2. Function of equipment.

2.1. Summary of functions

With regard to its functions the electrical construction of the receiver must be subdivided into several groups, which are fed from a common power unit.

1. Partial group
Single conversion superheterodyne reception of the LF- and MF-range 95 to 1700 kc/s.

2. Partial group
Double conversion superheterodyne reception of the R.T. and H.F. range 1,6 to 28 Mc/s.

3. Partial group
Straight-reception of the distress frequency 500 kc/s.

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4. Partial group

A.F. amplification of all receiving ranges.

5. Partial group

Calibration oscillator for the frequency-control of the first oscillator.

6. Partial group

Power supply for the receiver.

2.2. Function of the partial groups

2.2.1. Partial group 1

Single conversion in the frequency range 95 - 1700 kc/s.
(Ranges selected by push-buttons VIII to XI)

The incomming R.F. signal is led to the aerial coupling coil of the frequency range selected respectively via condenser C 102. The aerial is inductively coupled to the first R.F. circuit.
An overload protection device Si 1 is switched in parallel to the receiver input. It serves to protect the aerial coupling coils against heavy atmospherics and against high R.F. voltages radiated from the own transmitter.
An I.F. rejector circuit consisting of Sp 64/C 100 and tuned to 80 kc/s serves in conjunction with the first R.F. circuit to prevent the reception of wireless services operating on this frequency.
The frequency range from 95 to 1700 kc/s is divided into four single ranges, which can be selected by push-buttons S VIII - SXI. A sufficient overlap at the band ends ensures a complete coverage.

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Signals from the aerial pass through the first R.F. circuit and are led to the control grid of Rö 1 (UF 85). R.F. amplification is provided by this valve. Passing the second R.F. circuit the amplified signal is led to the control grid of the mixer valve Rö 2 (UCH 81). Its triodesystem serves to generate the oscillatoring frequency. The oscillator circuit and the two R.F. circuits are gang-tuned by means of a gang condenser (C 104, C 116, C 123).

For maximum matching to every type of aerials a capacitor of small capacity variation (C 105) is connected in parallel to tuning

condenser C 104 of the first R.F. circuit. (Aerial tuning)

The I.F. of 80 kc/s generated in the mixer valve Rö 2 is selectively amplified by two stages (Rö 4 and Rö 5) and is demodulated in the diode system of Rö 5.

The 80 kc/s I.F. amplifier consists of 8 respectively 6 fixed tuned circuits, which are combined to four band-pass filters. Coupling between the mixer valve Rö 2 (UCH 81) and the first I.F. amplifier valve Rö 4 (UBF 80) is done via a single band-pass filter. The I.F. voltage generated in Rö 2 is led to this band-pass filter via decoupling resistor W 15.

In switch position NARROW the anode circuit of Rö 4 consists of the primary of a quadruple band-pass filter. The two filters of this unit are capacitively coupled via condenser C 157. Only the first band-pass filter is effective, when operating on switch-position WIDE. An other band-pass filter forms the anode circuit of the second I.F. amplifier valve Rö 5 (UBF 80), the secondary of this filter is connected to the receiving diode system. In order to keep the damping of the circuit low, the diode is connected to a tap of coil Sp 91. The bandwidth and the selectivity of the I.F. amplifier can be changed by variation of the inductive coupling of the single band-pass filters and by addition of damping resistors to the quadruple band-pass filter and to the diode filter. The bandwidth switch S 12 enables changing of the bandwidth on two switch positions

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In switch position WIDE the band-pass width is approx. 3 kc/s, which guarantees a good speech fidelity on A3-operation. For reception of heavy interfered signals or at A1-operation the selectivity can be enhanced by using the bandwidth position NARROW. The bandwidth is now approx. 1 kc.

The demodulated A.F. voltage is led to the A.F. amplifier. (See 4. partial group). At reception of unmodulated signals (A1-operation) the I.F. voltage is heterodyned with an auxiliary frequency produced in a local oscillator (B.F.O.) consisting of valve Rö 7 in conjunction with coils Sp 102/103. Its frequency is variable from 78 to 82 kc/s by means of condensers C 211/C 212, thus producing a beat note from 0 to 2 kc/s (the difference between the receiving frequency and the oscillation of the B.F.O.), which is led to the A.F. amplifier input.

Closely adjacent signals may still be separated due to the fact, that the beat note of the B.F.O. can be tuned as well above as

below the I.F. frequency, e.g. wanted tuned signal 80 kc/s - interfering signal 82 kc/s. If the B.F.O. is tuned to 81 kc/s, an 1 kc-note results for both signals tuning the B.F.O. to 79 kc/s (below the wanted signal) will result an 1 kc-note for the wanted signal but a 3 kc/s-note for the interfering signal. Using the B.F.O. in this way a good audible separation of the both receiving signals is possible.
From the anode of valve Rö 5 the I.F. voltage is led to the second diode system of this valve via condenser C 167. This portion serves to produce the voltage for the automatic gain control of the receiver. By rectifying the I.F. voltage a negative voltage is gained, the level of which is proportional to the incomming R.F. voltage. This voltage is led to the control grids of valves Rö 1, Rö 4 and Rö 5. Its circuits contain resistors and condensers which serve for filtering and decoupling of the single stages against another. The A.G.C. voltage can be switched on and off by switch S 13.

206a 2.2.2. partial group 2.

Double conversion in the frequency range 1,6 to 28 Mc/s.

The single ranges can be selected by push-buttons I - XI. The total range from 1,6 - 28 Mc/s is divided into seven single ranges, which can be selected by push-buttons. The R.F. amplification of the incomming signals until the grid of the first mixer valve Rö 2 is made as described under partial group 1. Solely the I.F. rejector circuit for 1522 kc/s consisting of Sp 65/C 101 is connected via Gr 4

Whilst the receiver operates in the frequency range from 95 to 1700 kc/s on single conversion with an I.F. of 80 kc/s only, it needs two intermediate frequencies for double conversion in the frequency range from 1,6 - 28 Mc/s.
At double conversion the incomming signals will be converted at first into a high I.F. (1522 kc/s) and then later on into the low I.F. of 80 kc/s.
R.F. signals within the range from 1,6 - 28 Mc/s form an I.F. of 1522 kc/s in the anode circuit of the first mixer valve Rö 2 (UCH 81). This I.F. will be selectively amplified and led to the

control grid of the second mixer valve Rö 3 (UCH 81) via the quadruple band-pass filter.
The I.F. of 1522 kc/s is obtained by setting the oscillations of the local oscillator (triode system of Rö 2) to a frequency 1522 kc/s above the receiving frequency.
If a high frequency constancy over longer periods should be required, the oscillator can also be provided for crystal-control within the range from 1,6 - 28 Mc/s for special services. (See 5. partial group, item c)
The triode system of mixer valve Rö 3 generates a crystal-controlled auxiliary frequency of 1602 kc/s, which is heterodyned with the I.F. of 1522 kc/s, thus forming an I.F. of 80 kc/s, as already shown in the first partial group and which is also amplified in the same way. But now the band-pass filter for 80 kc/s in the anode circuit of mixer valve Rö 2 is not in function and the valve Rö 4, which serves as the first I.F. amplifier in the frequency range from 95 to 1700 kc/s at single conversion, is switched off.
All other functions as demodulation, A.G.C. and A1-operation remain as described under the 1. partial group.
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The double conversion system ensures a high selectivity also in the R.T. and H.F. ranges due to the low I.F. in conjunction with a great number of I.F. circuits and guarantees furthermore a good image rejection.

2.2.3. Partial group 3

Straight reception of the international distress frequency 500 kc/s

The receiver UE 12 operates as a straight-receiver for the reception of the international distress- and calling frequency 500 kc/s.
Switching-over the set to this frequency range is done by the bandwidth switch S 12. This procedure is independently of the frequency tuned on the dial before.
Signals from the aerial pass through the aerial coupling coil Sp 66 via switch S 12/1 and are inductively coupled to the grid circuit of valve Rö 1. From its anode circuit consisting of a band-pass filter with the elements Sp 68/C 113 and Sp 69/C 115 the amplified signal is led to valve Rö 4.
Passing this valve the signal is coupled to the control grid of

valve Rö 5 via the 500 kc/s band-pass filter of the anode circuit of Rö 4. From the secondary of the band-pass filter in the Rö 5-anode circuit the signal is led to the signal diode system, where demodulation is carried out. The now gained A.F. voltage is amplified in the A.F. amplifier (see partial group 4).
In order to enable also the reception of A1-signals at switch position DISTRESS, The B.F.O. (Rö 7) is simultaneously changed from 80 kc/s to 500 kc/s, when the bandwidth-switch will be set to position DISTRESS. On this type of operation the bandwidth of the receiver is 16 kc/s, corresponding to the international regulations.

In the position marked CONVERTER of the bandwidth switch the receiver UE 12 operates likewise as a straight-receiver as described before. Only a plate voltage is connected to the L.F. converter. An I.F. of 500 kc/s is obtained from this set and is led to the aerial input of the receiver UE 12.

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2.2.4. Partial group 4

A.F. amplification for the 1., 2., and 3. partial group.

The A.F. voltage obtained from the signal diode system is taken from resistor W 48 and is led to the triode section of valve Rö 6 via potentiometer W 54 (volume control). A noise limiter (squelch) is connected in parallel to the A.F. amplifier input. It can be operated by switch S 14 and serves to reduce incomming interferences to a grade which does not impair the communication service.
Provision is made for use of a note filter, tuned to 1000 c/s, which can be connected to the anode circuit of the A.F. amplifying valve Rö 6 (triode system) by switch S 15 instead of the anode load resistor W 56.
The bandwidth of the note filter circuit is approximately 150 c/s.

A considerable improvement of the receiver's selectivity will be achieved at A1-operation. By tuning of the variable B.F.O. note to resonance of the high selective note filter circuit all interfering A.F. signals outside the resonance will be suppressed widely.

The amplified A.F. voltage is led from the anode circuit of the triode system to the control grid of the A.F. output valve via condenser C 193.

The output transformer Tr 1, in the plate circuit of the output valve serves to match the different headphones and loudspeakers to the valve.
A high-class loudspeaker is connected to the terminals 9 and 10 of the transformer's secondary. It can be switched off by switch S 16. A dummy load resistor W 63 is then switched on automatically

An additional loudspeaker can be connected to clampsat the cabinet's head terminal. Winding 3/5 of Tr 1 is provided for the connection of headphones. It is connected as well to a pair of jacks, mounted on the front panel, as to clamps in the cabinet.

The headphone of an eventually used microtelephone must be connected to winding 4/5, for which clamps in the cabinet are provided.
In order to check own keying of a transmitter a monitoring voltage can be led to the control grid of the output valve Rö 6. Simultaneously also blocking of the receiver during keying is possible by feeding the suppressor grids of the valves 1, 4, and 5 with a negative blocking voltage. The time constant of the blocking elements is such, that listening-through or break-in operation is still possible at maximum keying speed.
The monitoring- and blocking-voltage must be free of any earth potential or earth connection if used for a receiver UE 12 in AC/DC-operation. A potential free of earth would not be necessary if the receiver is used on A.C.-operation via a separating transformer, but fundamental provision is made to keep this voltage free of earth as a safety precaution. (See partial group 6.)

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The monitoring- and blocking-voltage is produced in the HAGENUK-transmitters and is led to the receiver directly or via an additional unit. The volume control of the monitoring voltage is independently from the volume adjusted on the receiver and can be controlled by a potentiometer housed in a control unit.
Blocking of the receiver is necessary for simplex operation.

2.2.5. Partial group 5

Calibration oscillator

a) for checking the dial calibration in the whole frequency range from 95 kc/s to 28 Mc/s,

b) for pre-tuning to transmitters in the frequency range from 1,6 to 28 Mc/s.

To a) checking the dial calibration in the frequency range from 95 kc/s to 28 Mc/s.

The unit CALIBRATION OSCILLATOR with its crystal-controlled 100 kc/s oscillator is provided for permanent checking of the receiver's dial accuracy.
The 100 kc/s crystal is excited between the screen and the control grid of valve Rö 10 (UF 85), where a frequency spectrum with intervals of 100 kc/s is gained from the fundamental. Switching-on the calibration oscillator the frequency spectrum is coupled to the receiver input via condenser C 322 and simultaneously the B.F.O. is switched on. Its tuning condenser will be disconnected and replaced by trimmer capacitor C 213, which is so tuned, that the B.F.O. produces a frequency of 80 kc/s (as the second I.F.).

Rotating the drum dial now a beat zero will occur every 100 kc/s on the dial from 0,1 to 28 Mc/s by heterodyning the I.F. with the B.F.O.-frequency.
Any deviations of the dial calibration are indicated by placing the beat zero above or below the full 100 kc/s markings on the dial.
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Considering the size of the indicated deviation also frequencies placed between two beat zeros may be tuned with a sufficient accuracy.
This method is used only in the frequency range from 95 - 1700kc/s (1. partial group).
For frequencies above 1,6 Mc/s (2. partial group) the calibration of the receiver has to be carried out as described under section b).

To b) calibration of the receiver and pre-tuning to transmitters in the frequency range from 1,6 to 28 Mc/s.

For better understanding of the calibration procedure within this frequency range the following explanation of the principle used for the calibration method at the receiver UE 12 is necessary.

Principle of calibration.

If a R.F. signal is led to the aerial input of a double conversion receiver, the first intermediate frequency will be produced in the anode circuit of a mixer valve, when the first converter (oscillator), which determines the dial calibration, is correctly

tuned. Normally this frequency is then led to a mixer stage, where it is heterodyned by the mostly crystal-controlled second converter, thus forming the second intermediate frequency (I.F.)

If this second converter would be designed now to operate on variable tuning instead of crystal control and if its frequency would be changed e.g. to the amount of +10 kc/s, so a new I.F. 10 kc/s higher would be produced. But this I.F. would not be transformed due to the selectivity of the I.F. amplifier and also no beat note would be achieved by the B.F.O. tuned to the I.F.

In order to obtain again the desired second I.F., the first converter could be detuned now likewisely to 10 kc/s higher. A correct second I.F. would be produced now without any changing of the input frequency, but the dial calibration of the receiver is now displaced for the amount of +10 kc/s. Naturally also the first I.F. is likewisely 10 kc/s higher now.

Presuming the frequency of the incoming R.F. signal and the frequency of the second converter have a high grade of accuracy, this fact can be used for the calibration of the receiver. If namely the second converter (oscillator) is retuned now to the original frequency, then the receiver is accurately tuned to a transmitter operating 10 kc/s above the calibration frequency. This methode has been used for the calibrating system of the receiver UE 12.

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For the calibration of the receiver dial (position CALIBR. TUNING of the switch on the left-hand side) the frequency spectrum produced with high accuracy by the 100 kc/s crystal oscillator is led to the receiver aerial input. For calibrating purposes the second converter functions during this procedure as a variable oscillator with a tunable frequency range of 100 kc/s (± 50 kc/s within the I.F.). Frequency control of the second converter is made by the knob of the auxiliary dial.

In order to ensure correct tuning of the second I.F. at calibration the B.F.O. is adjusted to produce a frequency equal to the second I.F. and thus showing correct calibrated tuning by giving a beat zero.

Calibration of the receiver in the frequency range from 1,6 to 28 Mc/s.

For the calibration of the receiver in the frequency range 1,6 -

28 Mc/s (switch position CALIBR. TUNING) a tunable calibration oscillator (valve Rö 8 UCC 85 and condenser C 300) is switched on and is added to the B.F.O. and to the crystal oscillator, producing the 100 kc/s spectrum in switch position CALIBR. OSC.

The calibration oscillator permits a frequency variation of ± 50 kc/s from the mid-frequency 1602 kc/s by means of condenser C 300. The frequency tuned respectively is to be seen on a clearly marked auxiliary dial (division 1 kc/s = 2 mm).

The R.F. voltage of this tunable oscillator is led to grid 3 of the mixer valve Rö 3. The triode portion of this valve, which at normal receiving operation in this frequency range produces the crystal-controlled oscillator frequency of 1602 kc/s, is switched off during the calibrating procedure. Its function is carried out by the tunable calibration oscillator. Furthermore the quadruple band-pass filter for the I.F. of 1522 kc/s is disconnected and will be replaced by a single circuit consisting of coil Sp 80/C 113. This circuit is commonly tuned with the calibration oscillator by means of a variable gang condenser. Its mid-frequency corresponds to the I.F. of 1522 kc/s and equal to the calibration oscillator it also has a frequency variation of ± 50 kc/s, which is necessary in order to transfer the detuning of the first I.F. (1522 kc/s) depending on the calibration. As already mentioned, the 100 kc/s frequency spectrum operating as a calibrating frequency is led to the receiver input at tuning of frequencies between 1,6 and 28 Mc/s. If now the auxiliary dial of the variable calibration oscillator is set to zero position, a beat zero will occur at each full 100 kc/s dial marking above 1,6 Mc/s when turning the drum dial.

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A detuning of the calibration oscillator frequency for e.g. +10 kc/s will also cause a changing of the beat zero indication on the dial of 10 kc/s higher between frequencies from 1,6 to 28 Mc/s.

Setting the auxiliary dial to 20, 30 ..... 90 kc/s will change the corresponding beat zero characteristics on the drum dial in the same proportions.

At position "0" of the auxiliary dial a beat zero occurs on 2000 kc/s, at 10 kc/s auxiliary dial setting the beat zero will

occur on 2010 kc/s, at 50 kc/s on 2050 kc/s, at 90 kc/s on 2090 kc/s, at 0 on 2100 kc/s and so on up to 28 Mc/s.

If the receiver is so tuned to the frequency desired, the frequency control switch must be reset to position OFF. The receiver is now ready to operate on the pre-tuned frequency.

The built-in 100 kc/s crystal offers the feature of checking the calibration of the auxiliary dial with the highest grade of accuracy at any time. For this purpose the auxiliary dial must be adjusted to "zero". Then any frequency in the range 1,6 - 28 Mc/s is tuned to a beat zero on the drum dial at calibration oscillator in switch position CALIBR. OSC! Switching-over now to position CALIBR.TUNING 1,6 - 28 Mc/s likewisely a beat zero must occur on zero position of the auxiliary dial.
(For deviations see adjustment instruction.)

The variable calibration oscillator (CALIBR.TUNING 1,6 - 28 Mc/s) enables also a frequency measurement of an unknown transmitter. For this method the B.F.O. must be switched on and its tuning
206 control must be placed to "O".
The drum dial must be turned until a beat zero by heterodyning with the frequency of the unknown transmitter is achieved. Now the crystal control switch must be placed to CALIBR.TUNING 1,6 - 28 Mc/s and a beat zero must be obtained by operating the auxiliary dial. The drum dial will show now the frequency of the unknown transmitter in a value of full 100 kc/s readings, whilst the auxiliary dial allows to read the kc/s or c/s values with sufficient accuracy.

Example:

Drum dial reading between 26,1 and 26,2 Mc/s, auxiliary dial reading 21,5 kc/s.
Frequency of the unknown transmitter 26,1215 Mc/s.

c) Crystal control of the first converter (1.Mixer stage)

In the unit CALIBRATION OSCILLATOR five crystals are provided for crystal control of the 1. mixer oscillator Rö 2 in the frequency range 1,6 - 28 Mc/s. The crystals can be selected by the crystal selector switch S 20 with the positions 1 - 5. Within these 5

positions the oscillator system of the mixer valve Rö 2 (triode portion) is disconnected and instead of it the crystal of the crystal oscillator Rö 9 is operating. Crystal excitation is obtained between the anode and the control grid of valve Rö 9, the frequency produced is led to grid 3 of mixer valve Rö 2. Small trimmers connected in parallel to every crystal enable corrections within small limits. (For adjustment to the required frequency see instructions for adjustment). Due to the I.F. of 1522 kc/s at double conversion the crystal frequency shall be 1522 kc/s higher than the respective receiving frequency.

After selection of the desired receiving frequency by the crystal selector switch the R.F. circuits must be tuned additionally corresponding to the frequency of the transmitter to be received. This has to be done by selection of the corresponding frequency range (push-button) and by tuning the drum dial to the receiving frequency.

Remark:

The electrical components combined in the unit "calibration oscillator" are not contained in the main diagram of the receiver. These parts are represented in an additional wiring diagram. The corresponding inter-unit connecting terminals for the calibration oscillator are designated with the letters F.L. in the main diagram. The same figures for marking the single inter-unit connections are used in both diagrams.

2.2.6. Partial group 6
a) Power supply
b) Power unit

a) Power supply.

Depending on the power supply desired the receiver UE 12 can be delivered in four different performances:

1. as A.C./D.C. receiver for operation on A.C.- and D.C. mains 110/220 Volts. (See illustration 97.53 E 487 97 Sa D 10.4.01 Bl 26)
2. as A.C./D.C. receiver for operation on an A.C. mains 110/220 V. At this type the receiver is fed via a special separating trans-

former placed in the receiver cabinet. (See illustr. 97.53 E 489) 97 Sa D 10.4.01 Bl. 1 b

3. as A.C./D.C. receiver for operation on a D.C. maine as shown under 1. and as A.C. receiver with a separating transformer placed in the cabinet. (See illustr. 97.53 E 486 / 97 Sa D 10.4.01 Bl. 3 b.
4. as A.C. receiver with separating transformer for operation on a converter from a 24 volts battery. (See illustr. 97.53 E 488).

The fundamental circuit of the receivers is the same for the four performances, only the cabinets are different.

To 1. A.C./D.C. type

Designed as A.C./D.C. receiver the mains voltage is led to the receiver via an interference eliminating choke device, which prevents from incoming of interfering R.F. voltages and which is placed in the cabinet. It also carries the fuse for the receiver, which easily can be replaced by unscrewing the cover of the fuss-box, mounted on the upper side of the shielding box; from the choke device the mains voltage is led to the receiver via knife contacts 27, 28 (bridged) and 29. The lead coming from 29 is connected to the chassis via the double-pole mains switch S 18.

C a u t i o n !

The receiver chassis is connected to ground via condenser C 209, 5000 pF.
This condenser may under no circumstances be enlarged or bridged at A.C. operation, D A N G E R of Life appears!

Shieldings related to the potential of the chassis, may not be earthed. They must be installed carefully insulated and protected against touching (e.g. shielding of the leads for the monitoring- and blocking voltages).
Care must be taken that the earthed phase of the mains is connected to clamp 5.

To 2. A.C. type

At the A.C. type terminal 3 of the transformer is connected directly to one pole of the mains via clamp 4. The other pole of the mains is led via clamp 3 , fuse Si 4 in the cabinet, clamp 25 switch S 18 of the receiver and via clamp 26 to terminal 6 of

the transformer.
A voltage of 220 volts, which serves to produce the anode voltage and a voltage of 110 volts for heating the valves are derived from the transformers secondaries. The 220 volts A.C. voltage is led to the receiver via clamp 27 , the heating voltage via clamp 28 . An earthed protective winding is provided between the primary and the secondary of the transformer, which prevents from incoming of interfering R.F. voltages.
At this type the chassis is directly connected to earth. The special hint under "A.C./D.C.type" is not valid. The fuse for the receiver is placed on the cabinet's rear close to clamps 3 and 4 , it is accessible after having withdrawn the insert.

To 4. A.C. operation via a converter on a 24 volts battery

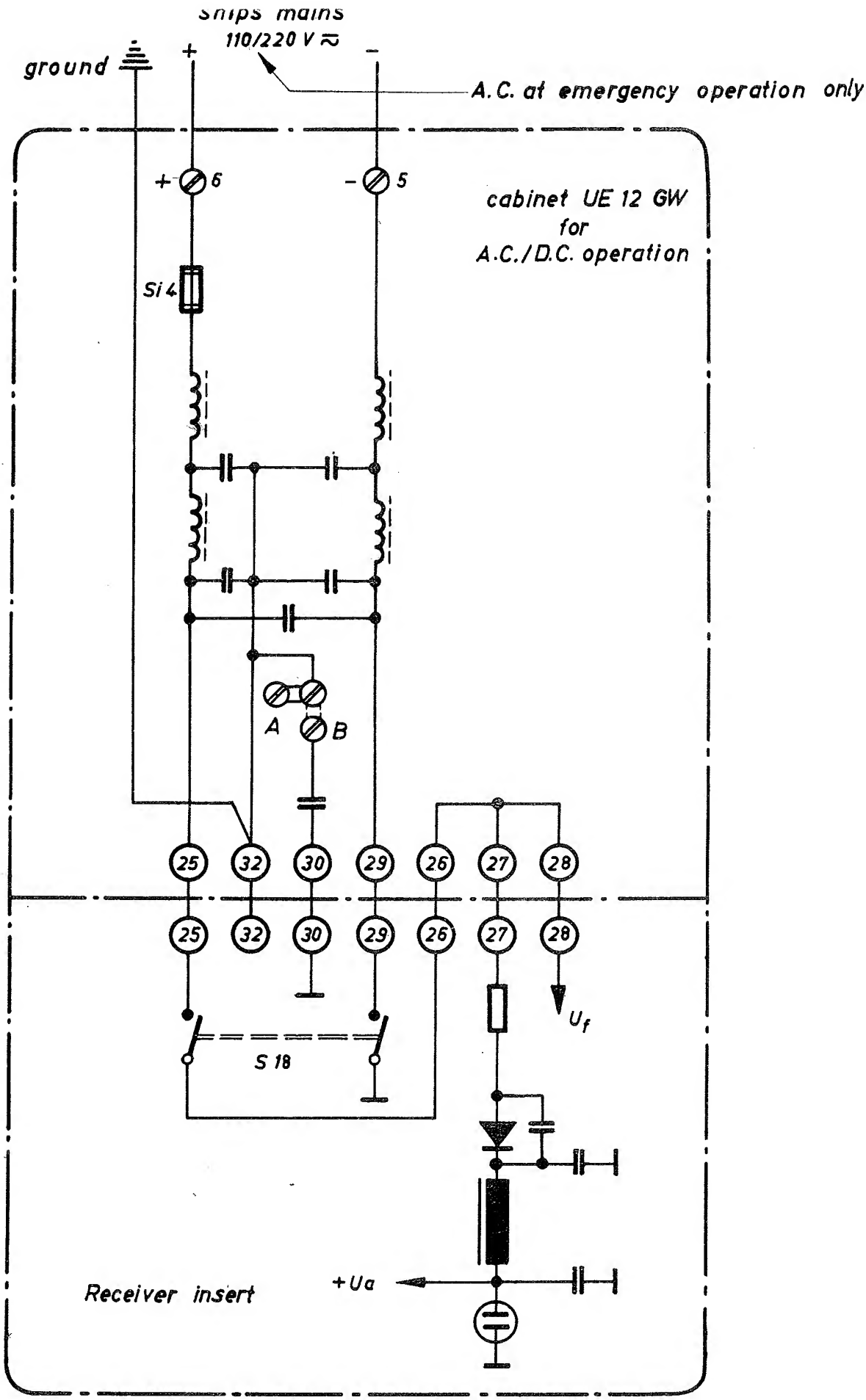
For this type of operation the 220 volts A.C. voltage is derived from a battery-driven converter.
206 Switch S 18 in the receiver operates a starting relay for the converter via clamps 25 , 26 , 7 and 8 . The A.C. voltage of the converter is connected to the transformer's primary via clamps 3 and 4 and via fuse Si 4.
All other as under "A.C. type".

To 3. Special performance

To obtain maximum operating conditions for the operation on D.C. - or A.C. mains, in the cabinet of this type the components for D.C. and A.C. operation are housed.
D.C. voltage is led to the receiver via an interference eliminating choke device, for A.C. voltage the separating transformer and the a.m. choke device is used.
Selection of the type of the operating voltage (A.C. or D.C.) is made outside the receiver, for example by means of a switch incorporated in a remote control unit.

b) Power unit.

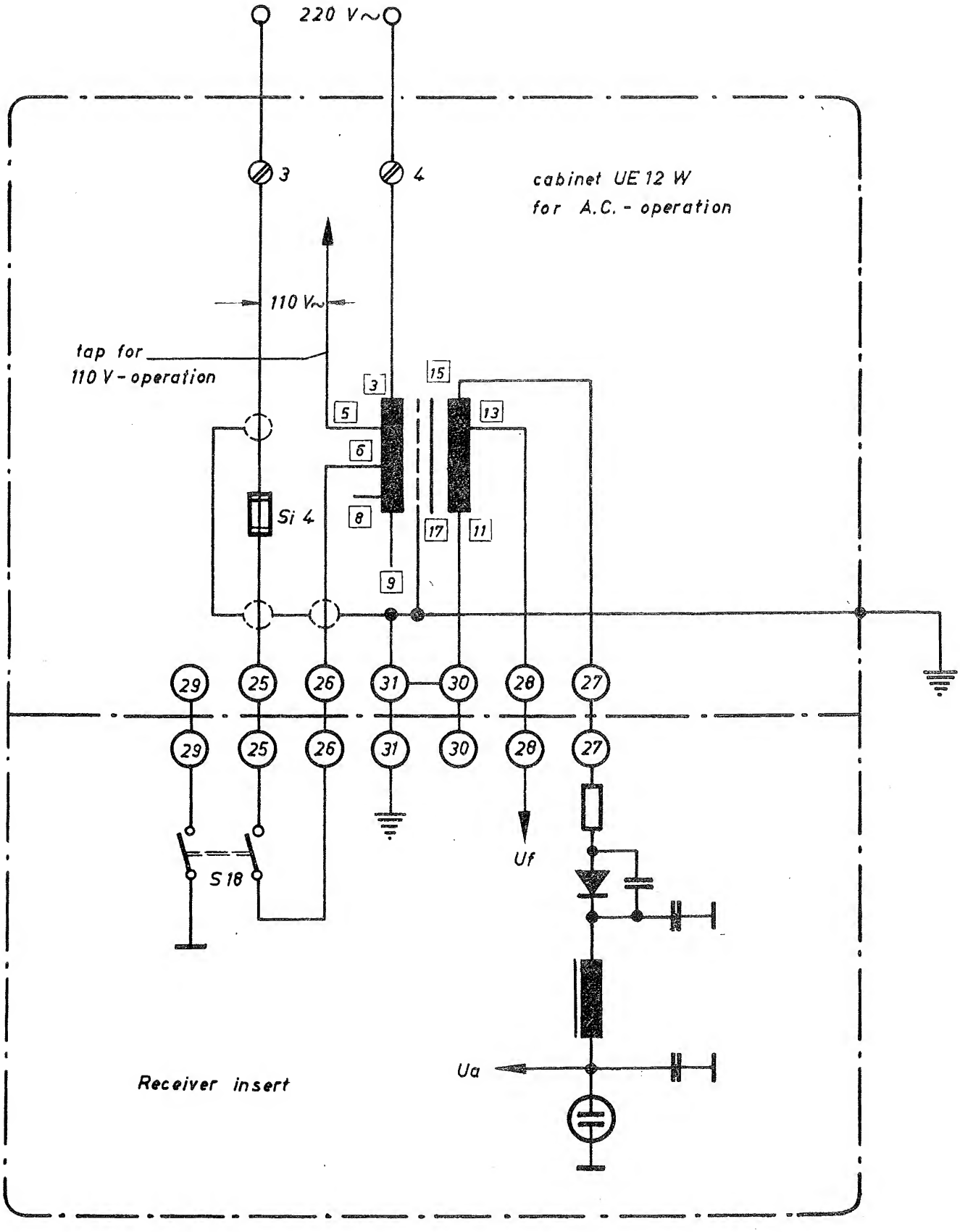
At A.C. operation the anode D.C. voltage for the receiver is derived from metal rectifier Gr 3. The receiver condenser C 207,



clamp (32) must be independent from other earth connections and must directly be connected to ships earth

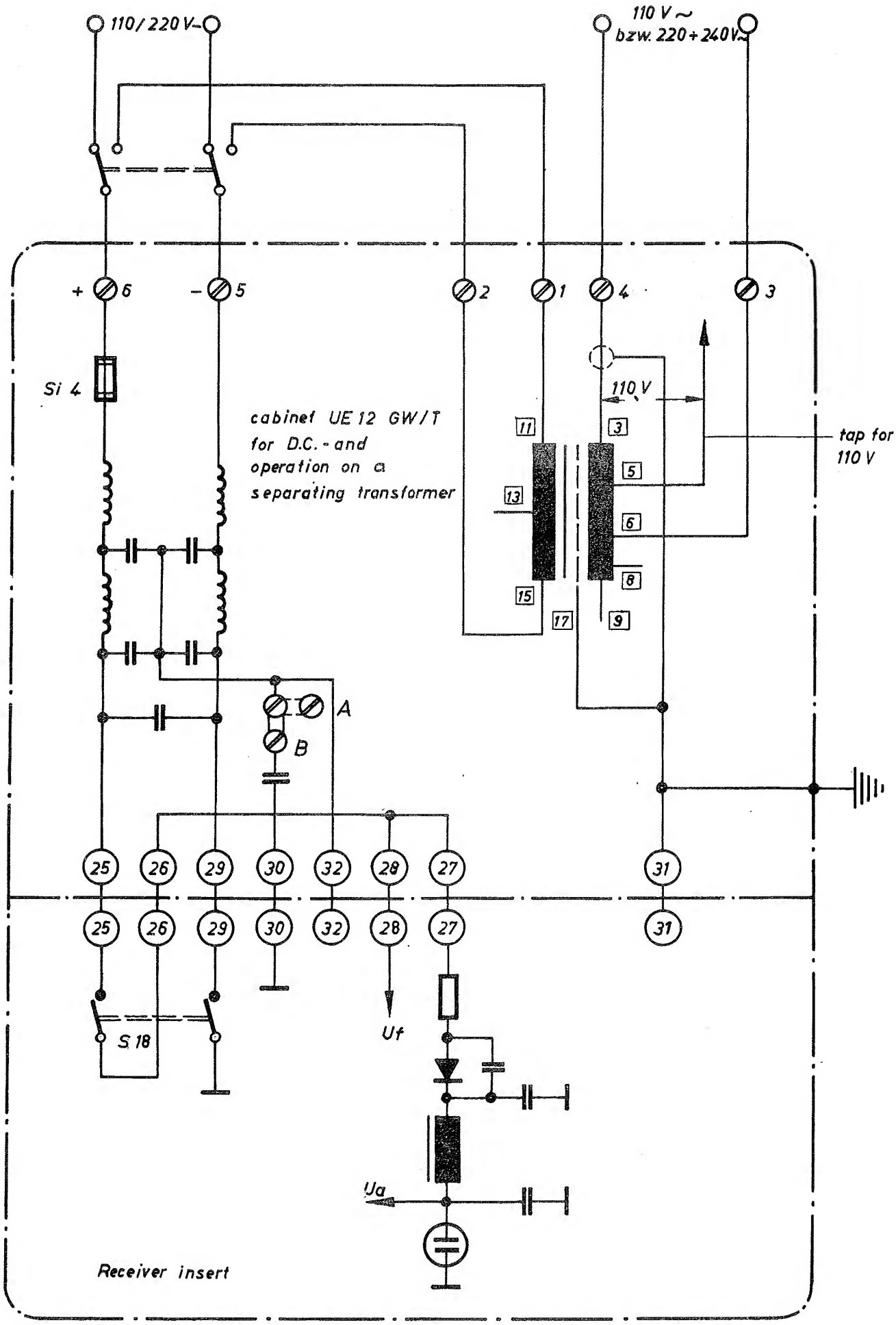
Principle for supply of UE 12 from ships D.C. voltage

97. 53 E 487



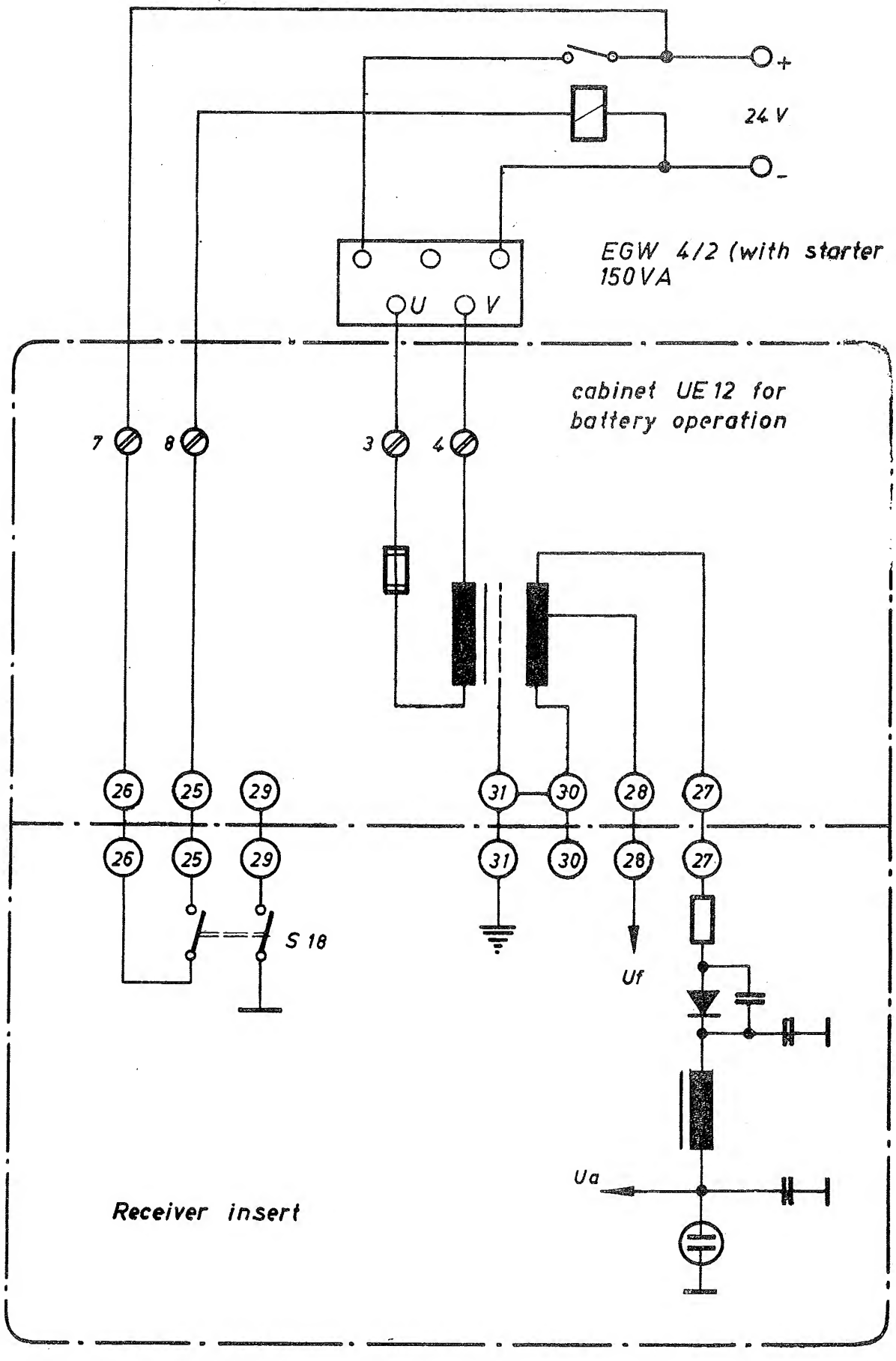
Principle for supply of UE 12 from an A.C. mains

97.53.E 489



Principle for supply of UE 12 from ships D.C.- and A.C. voltage

97.53 E 486



Principle for supply of UE 12 from a 24 V – battery via a converter

97.53 E 488

anode choke Dr 4 and smoothing condenser C 208 serve as smoothing elements at A.C. and D.C. operation. The glow-lamp La 2 indicates the anode voltage. It is therefore mounted on the front plate.
Three heating circuits for the valves are provided, a fourth circuit feeds the two dial lamps of the drum dial and the lamp for the auxiliary dial. This circuit can be opened between clamps 41 and 42, thus enabling to heat additionally the valves of a converter type KL 2 if wanted.
At receivers of the type "special performance" care must be taken, that at a ships mains of 110 volts D.C. and also at 220 volts A.C. mains voltage the secondary of the transformer housed in the cabinet is switched-over to 110 volts.

3. Mechanical construction

The receiver is designed as insert and is housed in a stable cabinet. After loosening the red marked srews the insert can be readily withdrawn.
Adequate handles facilitate this procedure and protect the tuning control elements on the frontplate against damage.
The electrical interconnection to the cabinet wiring is made via knife contacts. Guiding bolts ensure that the contact blades slide perfectly into the corresponding contact springs and that no canting occurs. The cabinet is fitted with shock absorbers to counteract the effects of external vibration.
All controls are clearly arranged on the lower part of the front panel.
The drum dial is divided into eleven frequency ranges. The most important frequency ranges of marine services are clearly marked and furthermore an evenly divided logging scale is provided. The ranges can be selected by push-buttons.
The cover of the dial permits full-vision and can be opened by loosening the two screws on the frame. The drum dial is accessible now to additional markings which may be made with a soft pencil only.
With regard to its intended use the set is extremely robust. All components are particularly suited to withstand the effects of vibration as well as climatic and tropical influences.

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2.2.7. Functions of relays

Relay R 2

Contact r 2/1 connects the aerial input to ground at operation on "calibration oscillator" and "calibration tuning 1,6 - 28 Mc/s", thus preventing radiation of the frequency spectrum via the receiving aerial.

Contact r 2/2 disconnects the receiving aerial and connects the output of the calibration oscillator (100 kc/s spectrum) to the receiver input.

Relay R 3

Contact r 3/1 disconnects the tunable oscillator (triode portion Rö 2) in the positions 1 - 5 of the crystal control switch S 20 and connects the output of the crystal oscillator Rö 9, which operates on pre-set frequencies, to grid 3 of mixer valve Rö 2.

Relay R 4

Contact r 4/1 disconnects in position "CALIBR. TUNING 1,6 - 28 Mc/s" the quadruple band-pass filter for 1522 kc/s from the anode of mixer valve Rö 2 and connects this anode to the tunable single circuit (C 113).

Relay R 5

Contact r 5/1 serves for switching-over grid 1 of Rö 3 from the quadruple band-pass filter for 1522 kc/s to the single circuit (C 113/Sp 80).

Contact r 5/2 shortcircuits the single circuit (C 113/Sp 80) in position OFF of the crystal control switch.

This contact is opened in switch position CALIBR. TUNING 1,6 - 28 Mc/s.

Relay R 6

Contact r 6/1 disconnects in switch position CALIBR. TUNNING 1,6 - 28 Mc/s the oscillator (triode portion Rö 2 from grid 3 of mixer valve Rö 2) and connects grid 3 to the output of the tunable calibration oscillator Rö 8.
Contact r 6/2 connects in position CALIBR. TUNING 1,6 - 28 Mc/s grid 1 (triode portion Rö 2) to ground.
At normal operation the output of the tunable calibration oscillator Rö 8 is connected to ground.

Relay R 7

Contact r 7/1 connects in the range 1,6 - 28 Mc/s the correcting condenser C 143 in parallel to coil Sp 82.
Contact r 7/2 connects the anode of valve Rö 4 to the quadruple band pass filter for 80 kc/s (coil 82) when receiving in the range from 95 kc/s to 1,7 Mc/s. In the frequency range 1,6 - 28 Mc/s the anode of Rö 4 is switched-over from coil 82 to the plate voltage.

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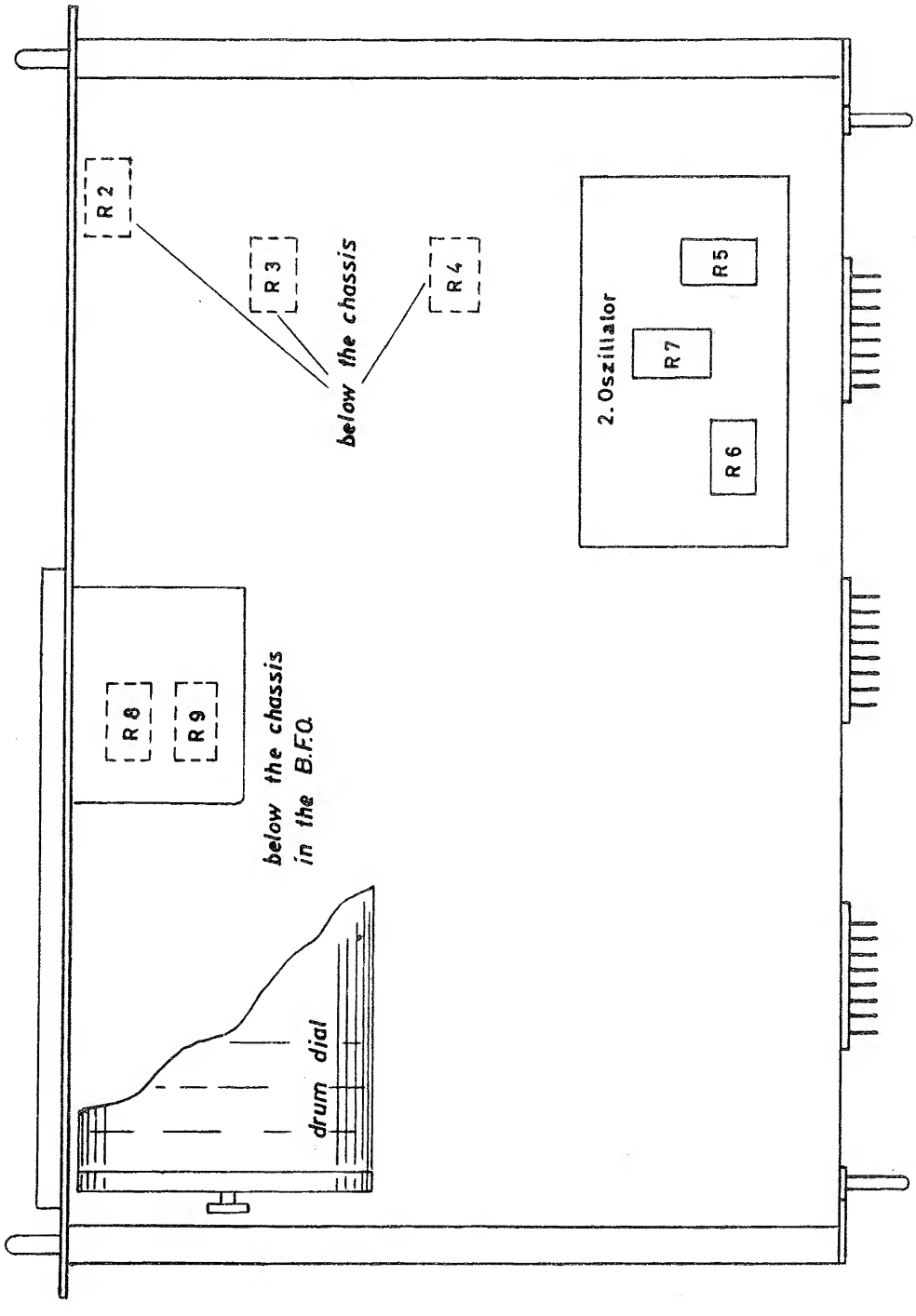
Relay R 8

Contact r 8/1 connects the tuning condensers C 211/212 (B.F.O.) in parallel at operation in the frequency ranges 95 - 1,7 and 1,6 - 28 Mc/s. When receiving the distress frequency 500 kc/s (bandwidth switch in position "500 kc/s") condenser C 211 is disconnected. This will ensure that the same frequency variation (approx. 2 kc/s) of the B.F.O. is obtained as well at 80 kc/s (2. I.F.) as at 500 kc/s.

Relay R 9

Contact r 9/1 disconnects the tuning condensers C 211/212 in the positions CALIBR. OSC. and CALIBR. TUNING 1,6 - 28 Mc/s.
Contact r 9/2 connects trimmer-condenser C 213 to valve Rö 7. The trimmer serves to adjust the B.F.O. to 80 kc/s (2. I.F.).



Arrangement of relays

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4. Technical Data

Frequency coverage:	95 kc/s - 28 Mc/s (in conjunction with Converter KL 2: 14 kc/s - 28 Mc/s)
Number of ranges:	11 (with converter KL 2: 13)
Selection or ranges:	by means of push-buttons
Special range:	distress frequency 500 kc/s
Tuning accuracy:	appr. ± 300 c/s, 95 - 1500 kc/s by direct adjustment on the drum dial 1,6 - 28 Mc/s by additional tuning on an auxiliary dial.
Tuning: (Gear ratio)	Coarse 10 : 1 fine 60 : 1
Number of circuits:	11/12 for 97 - 1700 kc/s 14/15 for 1,6 - 28 Mc/s 7 for 500 kc/s
Types of operation:	A1 (C.W.) A2 (M.C.W.) A3 (radiotelephony)
Sensitivity at a signal to noise ratio 3 : 1	A1 appr. 0.1 - 1.0 µV A2/A3 appr. 1.0 - 6.0 µV
Bandwidth at 3 db attenuation:	on the distress frequency ± 8 kc/s on position WIDE appr. ± 2,5 kc/s on position NARROW appr. ± 0,5 kc/s on position NOTE FILTER appr. ± 0,1 kc/
Selctivity:	appr. 50 c/s/db beginning with band limits
I.F.	on 95 - 1700 kc/s : 80 kc/s on 1,6 - 28 Mc/s : 1522 and 80 kc/s

I.F. rejection:	≧ 80 db
Image rejection:	range 95 - 840 kc/s appr. 90 - 60 db range 840-1700 kc/s appr. 60 - 50 db range 1,6-16,5 Mc/s appr. 90 - 60 db range 16,5-28 Mc/s appr. 60 - 50 db
Frequency range of B.F.O.:	appr. ± 2,5 kc/s continuously
A.F. band pass:	3 db attenuation, related to 1000 c/s, between 200 and 3500 c/s position WIDE.
A.F. output to the built-in speaker:	appr. 1 Watt on 110 V ≈ mains appr. 2 Watts on 220 V ≈ mains.
Gain control:	R.F. gain control at all types of operation automatically or manually, A.F. volume control manually.
Calibration oscillator:	100 kc/s
Crystal-control of the first mixer:	Facility provided for six plug-in crystals in the R/T and H.F. range
Valves:	3 x UF 85 2 x UCH 81 2 x UBF 80 2 x UCC 85 1 x UCL 82
Rectifier:	metal type AEG E 250 C 120
Power consumption:	220 V ≈ appr. 100 VA 110 V ≈ appr. 50 VA
Dimensions:	Height 400 mm Width 600 mm Depth 410 mm Weight 40 kgs

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All data are subject to possible alterations of design.

5. Operating instructions

To start up:	Switch MAINS to position ON. The dial lamps and glow lamp La 2 (anode voltage indication) will glow. After a warm-up time of 30 - 40 seconds the receiver is ready for use.
Frequency range:	Press push-button corresponding to the frequency desired.
Tuning:	Set switch CRYSTAL CONTROL to postion OFF. Rotate knob TUNING until the desired frequency of the selected range is to be seen on the drum dial without any parallax. (coarse tuning: big knob fine tuning: small knob)
Volume control:	Adjustment corresponding to the receiving conditions. A.F. volume control by the big knob. R.F. volume control either manually by the small knob at A.V.C. switched off or automatically at A.V.C. on.
Aerial tuning:	At every frequency tuning adjust aerial tuning control to maximum.
Loudspeaker and headphones:	The built-in loudspeaker can be switched on and off by pushing or pulling the small knob VOLUME! Switching-off the loudspeaker is especially recommended to prevent accustic feedback at DUPLEX-operation or to avoid interferences with other services within the same room. Jacks designated with Headphones are provided on the front panel for headphone reception.
Bandwidth-switch: position WIDE	Switch position provided to guarantee a high speech fidelity.

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position NARROW:	Switch position provided to improve the selectivity essentially. Suited for A1/A2 reseption especially.
Note filter:	On position note filter ON the selectivity of the set is enhanced extremely when receiving A1-signals in conjunction with the B.F.O.
Beat frequency oscillator (B.F.O.):	In position OFF at A2/A3-reception. (control knob rotated anticlockwise to stop). For A1-reception rotate control knob clockwise to position 0. Tune the desired frequency with knob TUNING to beat zero and now select the desired A.F. note by turning the knob B.F.O. clockwise or anticlockwise. At operation on the NOTE FILTER adjuste to maximum volume. (Resonance of the note filter).
Noise limiter: (Squelch)	Switch the SQUELCH on in the presence of atmospherics or interfering signals.
Bandwidth switch: position DISTRESS:	In the position DISTRESS the receiver is switched over to the distress frequency 500 kc/s independently of the frequency tuned before. The bandwidth is now ± 8 kc/s.
position CONVERTER:	If the receiver is combined with a converter, Type KL 2 (frequency range 14-105 kc/s) the converter will be switched on in this position.

5.1. Calibration of the receiver in the frequency range 0,1 - 28 Mc/s.
CRYSTAL CONTROL SWITCH to position "CALIBRATION OSC."

For the calibration of the receiver the volume must be diminished as much as possible. This is necessary in order to avoid faulty calibration due to beat notes occuring sometimes also at full 50 kc/s dial

graduation. This is also valid for position CALIBR. TUNING 1,6 - 28 Mc/s.

Set switch "CRYSTAL CONTROL" to position CALIBR.OSC.

a) At receiving frequencies with full 100 kc/s values, e.g. 500 kc/s: rotate knob TUNING to the desired frequency value on the drum dial. The dial marking must harmonize with the beat zero to be heard from the CALIBR. OSC. and showing the correct 100 kc/s value.
Conformity will be observed only if no deviations in the marking occur due to effects of temperature or other influences.
At faults as mentioned before the beat zero may be obtained below or above the corresponding full 100 kc/s dial markings.

b) at receiving frequencies between full 100 kc/s values, e.g. 530 kc/s, between 500 and 600 kc/s:

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at first check the calibration of the 500 and of the 600 kc/s dial division. If getting correct calibration, tune the desired frequency corresponding to the dial markings. In case of a deviation this must be respected corresponding to its tendency.

After calibration reset CRYSTAL CONTROL switch to position OFF. The receiver is now ready to operate on the pre-tuned frequency.

5.2. Calibration of the receiver in the frequency range 1,6 - 28 Mc/s. Switch position CALIBR. TUNING 1,6 - 28 Mc/s:

Set CRYSTAL CONTROL switch to position CALIBR. TUNING 1,6 - 28 Mc/s. The figures following the 100 kc/s value of the desired receiving frequency must be tuned by means of the auxiliary dial. Then operate knob TUNING until a beat zero is obtained between the two full 100 kc/s drum dial markings inside of which the desired receiving frequency is placed.
At receiving frequencies with full 100 kc/s values

place auxiliary dial to "0" and tune as described under 4.1. CALIBRATION.

Example:

desired frequency:
16.8000 Mc/s

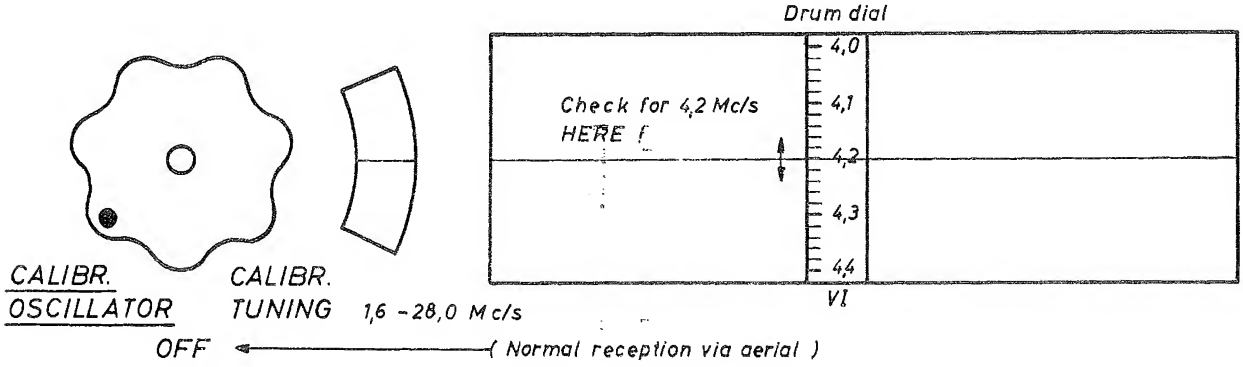
auxiliary dial to position	drum dial to beat zero at 16,8 Mc/s
"00"	

desired frequency:
26,1215 Mc/s

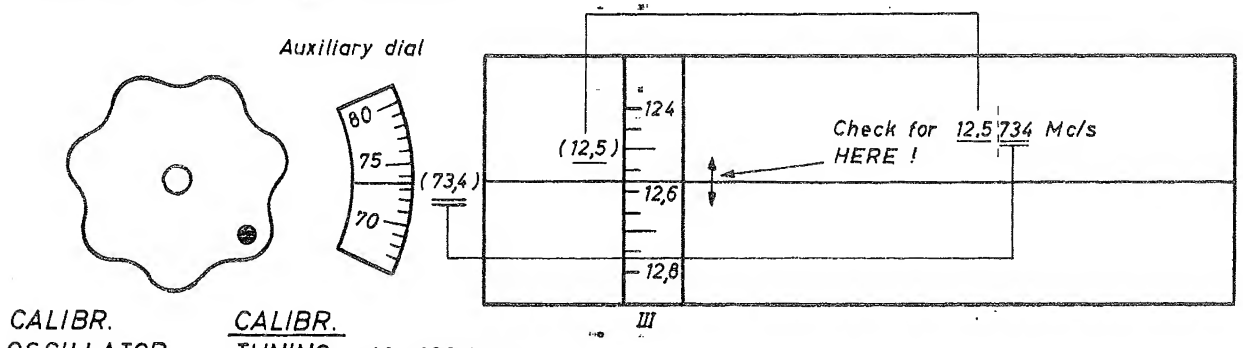
auxiliary dial to position	drum dial tuned to beat zero between 26,1 and 26,2 Mc/s.
21,5 kc/s	

After calibration reset CRYSTAL CONTROL switch to position OFF. The receiver is now ready to operate on the pre-tuned frequency.

Example for calibration of the receiver in switch position „ CALIBR. OSCILLATOR "
Frequency desired: 4,2 Mc/s
Receiver produces a beat note at fixed frequency distances of 100 kc/s within the entire frequency range.
For example range VI = 4 / 4,1 / 4,2 / 4,3 / 4,4 Mc/s a.s.o.

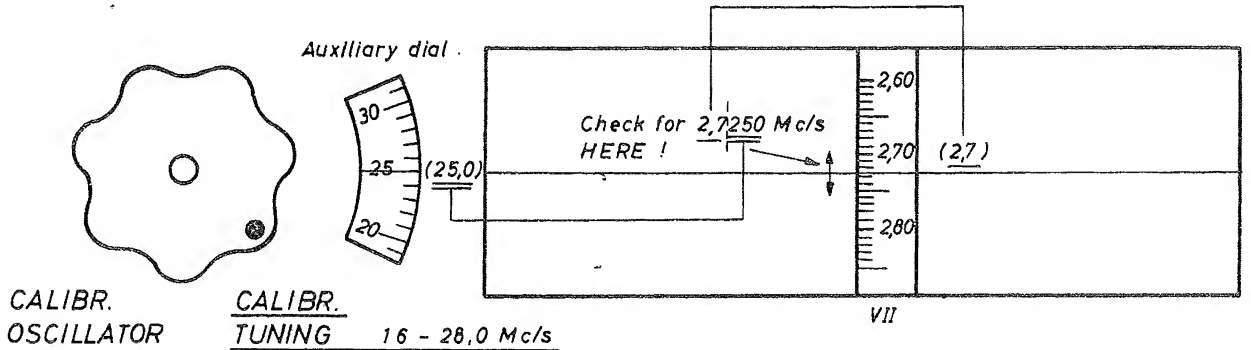


Example for calibration of the receiver in switch position „ CALIBR. TUNING 1,6 - 28,0 Mc/s
Frequency desired: 12,5734 Mc/s



CALIBRATION PROCEDURE:
Auxiliary dial to 73,4
Receiver to range III (11,7 - 16,5 Mc/s)
Adjust to a beat note, which is to be found beetween 12,5 and 12,6 on the drum dial.
Place switch to OFF, receiver is tuned and ready for the frequency desired.

Frequency desired: 2,725 Mc/s



CALIBRATION PROCEDURE:
Auxiliary dial to 25,0
Receiver to range VII (1,6 - 3,6 Mc/s)
Adjust to a beat note, which is to be found beetween 2,7 and 2,8 on the drum dial
Place switch to OFF, receiver is tuned and ready for the frequency desired.

To start up the receiver type UE 12.

Attention must be paid at the installation that the voltage adjustable in the receiver corresponds to the ship's mains voltage.

At A.C. operation put the corresponding plug into the switching-over socket. The connecting leads of the mains transformer built-in in the cabinet must be matched to the ship's mains voltage of 110 or 220 volts.

C a u t i o n !

If it should be necessary to operate the receiver from the ship's mains outside the cabinet for any repair, remove the switching-over plug before!

At A.C./D.C. operation on a 110 volts ship's mains put the second plug, which is placed in the receiver, into the switching-over socket.

The switching-over plugs are marked corresponding to their functions.

7.2. Instructions for alignment.

I.F. Section.

7.2.1. Alignment of the distress frequency 500 Kc/s (illustr.

a) diode band pass filter Sp 93 and Sp 94.
Set switch BANDWIDTH to position "500 Kc/s".
Tune signal generator to 500 Kc/s (modulated with 400 c/s 30 %) and connect to the control grid of valve Rö 5 (UBF 8o) via condenser C 166. Place switch "AVC" in position OFF. Adjust band pass filter Sp 93/94 under detuned conditions as follows: detune coil Sp 93 (solder tags 1 and 2) by connecting a capacitor of 200 pF in parallel. Adjust core of coil Sp 94 (lower core) to maximum reading of an outputmeter or to maximum audible volume. Then detune coil Sp 14 (solder tags 3 and 4) in the same way ad adjust core of coil Sp 93 (upper core) to maximum.

b) band pass filter coil Sp 98 and Sp 99.
Connect signal generator to the control grid of valve Rö 4 (UBF 80 via condenser C 197. Adjust band pass filter Sp 98/99 as follows: Detune coil Sp 98 (solder tags 1 and 2) as prescribed above and adjust core of coil Sp 99 (lower core) to maximum. Then detune coil Sp 99 (solder tags 3 and 4) and adjust core of coil Sp 98 (upper core) to maximum.

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c) band pass filter coil Sp 68 and Sp 69.
Connect signal generator to the control grid of valve Rö 1 (UF 85) via condenser C 106. For the adjustment of coil Sp 68 (solder tags 1 and 2, upper core) and of coil Sp 69 (solder tags 3 and 4, lower core) detune and set to maximum as prescribed above.

d) R.F. input coil Sp 67.
Connect signal generator via a condenser of 200 pF to the aerial connection clamp (48) and adjust Sp 67 to maximum.

e) B.F.O. for 500 Kc/s.
Connect signal generator, tuned to 500 Kc/s (unmodulated) to aerial connection clamp (48) via a condenser of 200 pF. Switch on the B.F.O. and tune its tuning control (C 212) to "0"position. Adjust to beat zero with the lower core of coil Sp 105.

7.2.2. Alignment of the 80 Kc/s Intermediate Frequency.

a) diode band pass filter coil Sp 90 and Sp 91.
Set switch BANDWIDTH S 12 to position NARROW and switch AVC to

position OFF. Press push-button of frequency range VIII. Tune signal generator to 80 kc/s (modulated with 400 c/s 30 %) and connect to the control grid of valve Rö 5 (UBF 80). Adjust coil Sp 90 and Sp 91 to maximum. Place switch BANDWIDTH to position WIDE detune Sp 91 by means of 300 pF and adjust trimming conden ser C 174 to maximum.

b) quadruple band pass filter coils Sp 82, 83, 87 and 88.

Set switch BANDWIDTH to position NARROW and connect signal generator to the control grid of valve Rö 4, Adjust coils Sp 82 83, 87 and 88 to maximum. Place switch BANDWIDTH to position WIDE detune anode circuit of Rö 4 and adjust C 163 to maximum.

c) band pass filter coil Sp 74 and Sp 75.

Place switch BANDWIDTH to NARROW and connect signal generator t the control grid of valve Rö 2. Adjust coil Sp 74/Sp 75 to maxi mum.

d) B.F.O for 80 kc/s

Connect signal generator to control grid of valve Rö 2 (without modulation). Switch on the B.F.O and turn its tuning control (C 211 and C 212) to "O"-position. Adjust to beat zero with the upper core of coil Sp 102.

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e) I.F. rejector circuit, coil Sp 64 (80 kc/s).

Press push-button of frequency range VIII and connect signal generator (80 kc/s, modulated) to the aerial clamp (48) via a condenser of 200 pF. Adjust core of coil Sp 64 to minimum.

7.2.3. Alignment of the 1522 kc/s Intermediate Frequency

a) quadruple band pass filter coils Sp 72, 73, 78 and 79.
Tune signal generator to 1522 kc/s (modulated) and connect to the control grid of valve Rö 2 via a condenser of 200 pF. Adjus coils Sp 72, 73, 78 and 79 to maximum.

b) correcting condenser C 143
Press push-button of frequency range VII and place switch S 13 (A.V.C.) to position OFF. Connect signal generator, tuned to 1522 kc/s (modulated with 400 c/s, 30 %) to the control grid of valve Rö 2 via a condenser of 200 pF. Then adjust correcting condenser C 143 to maximum.

c) I.F. rejector circuit, coil Sp 65 (1522 kc/s)
Press push-button of frequency range VII and connect signal generator (1522 kc/s, modulated) to the aerial clamp (48) via a condenser of 200 pF. Adjust core of coil Sp 65 to minimum.

7.2.4. Alignment of the calibration oscillator.

1.) Adjustment of the B.F.O. in position CALIBR. OSCILLATOR.

a) place switch S 20 CRYSTAL CONTROL to position CALIBR. OSCILLATOR and remove 100 Kc/s crystal. Tune signal generator to 80 Kc/s and connect to the control grid of valve Rö 5 via a condenser of 200 pF. Then tune the B.F.O to beat zero by means of trimming condenser C 213. The B.F.O. tuning control knob, placed on the panel front plate ist not in function at switch position CALIBR. OSCILLATOR. (see "function of equipment").

b) Alignment of the 100 Kc/s crystal.
Place switch S 20 to position OFF. Tune signal generator to 1 Mc (unmodulated) and connect to aerial clamp (48) via 200 pF. Press push-button of frequency range VIII and place the B.F.O. tuning control to "0" position. Then operate control TUNING until a beat zero is obtained when the drum dial shows 1 Mc or nearly 1 Mc. Place switch S 20 to position CALIBR. OSCILLATOR and adjust to beat zero by means of C 318 (load capacitance of the crystal).

CAUTION !

The calibration accuracy of the receiver depends on the alignment of the 100 Kc/s crystal. Therefore the signal generator must assure a high grade of frequency accuracy. It is recommended, to use a frequency decade unit or an 1 Mc-crystal-controlled oscillator instead of a normal signal generator, if possible. The same is valid for the alignment of the B.F.O for 80 Kc/s.

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2.) Alignment in position CALIBR. TUNING 1,6 - 28 Mc/s.

a) Oscillator, Sp 120 and C 301.
Place switch S 20 CRYSTAL CONTROL to position CALIBR. TUNING 1,6 - 28 Mc/s. Press push-button of frequency range VII and operat TUNING so, that no beat note is to be heard, which will occur every 100 Kc/s. Connect the signal generator (unmodulated) via a condenser of 200 pF to the control grid of valve Rö 2. Place the auxiliary dial of the calibration oscillator to the 50 Kc/s calibration marking on the lower part of the dial (50 - 99 Kc/s). Tune signal generator to 1472 Kc/s and adjust coil Sp 120 to beat zero. Now place the auxiliary dial to the 50 Kc/s calibration marking on the upper part of the dial (0 - 50 Kc/s). Tune signal generator to 1572 Kc/s and adjust to beat zero by means of trim-

ming condenser C 301.
Repeat this procedure several times.

b) Alignment of tuning circuit Sp 80 and C 314.
Place switch S 20 CRYSTAL CONTROL to position CALIBR. TUNING 1.6 - 28 Mc/s. Operate TUNING so, that no beat note is to be heard. Tune signal generator to 1472 Kc/s (modulated) and connect to the control grid of valve Rö 2 via 200 pF. Place the auxiliary dial to the 50 Kc/s calibration marking on the lower part of the dial (50 - 99 Kc/s) and adjust coil Sp 80 to maximum. Then tune signal generator to 1572 Kc/s, place the auxiliary dial to the 50 Kc/s calibration marking on the upper part of the dial (0-50 Kc/s) and adjust to maximum by means of C 314.
Repeat this procedure several times.

c) Checking the alignment CALIBR. TUNING 1,6 - 28 Mc/s.
Place switch S 20 CRYSTAL CONTROL to position CALIBR. OSCILLATOR. Rotate TUNING until a beat zero is obtained at a full 100 Kc/s marking on the drum dial. Then place switch S 20 to CALIBR. TUNING 1.6 - 28 Mc/s. Operating the auxiliary dial a beat zero must be obtained now again on the dial marking "0", If not, readjust trimmer C 301.

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7.2.5. Alignment of the crystals of the first mixer stage Rö 2 (UCH 8
Connect signal generator via 200 pF to aerial clamp (48) and place switch S 20 CRYSTAL CONTROL to any one of the positions 1 - 5. Tune signal generator corresponding to the receiving frequency desired. Switch-on the B.F.O. and place its tuning control to "0". Press the push-button for the frequency range of the frequency desired and rotate TUNING to maximum volume. Then a beat zero must be obtained by changing the load capacitance of the crystals used for CRYSTAL CONTROL operation in the switch positions 1 - 5.
The trimming condensers are attached to the crystal-controlled channels 1 - 5 as follows:

Channel 1 = C 329
" 2 = C 328
" 3 = C 327
" 4 = C 326
" 5 = C 325

7.2.6 Alignment of the note filter Sp 95 and C 192

Place switch NOTE FILTER to position ON.
Tune audio frequency oscillator to 1000 c/s and connect to the control grid of the triode portion of valve Rö 6 via a condenser of 10.000 pF. Adjust coil Sp 95 to maximum via the small iron core rod.

R.F. portion

7.2.7 Alignment of the push-button unit.

The alignment of the R.F. portion (push-button unit) has to be done in the order range XI to range I.
Start with the oscillator, which is placed in the chamber in the middle of the push-button unit. Then follows the alignment of the first R.F. amplifier stage (first chamber of the push-button unit, to be seen from the front panel) and afterwards the alignment of the second R.F. amplifier and mixer stage (third chamber of the push-button unit). Both the R.F. circuits and the oscillator must be tuned to maximum. For alignment of the 1. R.F. circuit place variable condenser C 105 AERIAL TUNING to mid-position. In the ranges XI - IV connect the signal generator to clamp 48 via 200 pF, but in the ranges III - I use a layer resistor of 70 Ohms instead of 200 pF. Place switch A.V.C. to position OFF.

Trimming frequencies
(dial pointer settings)

Range XI	0,180 Mc/s 0,120 Mc/s	Range V	7,8 Mc/s 6,5 Mc/s
Range X	0,370 Mc/s 0,220 Mc/s	Range IV	12,0 Mc/s 8,2 Mc/s
Range IX	0,750 Mc/s 0,450 Mc/s	Range III	15,5 Mc/s 13,0 Mc/s
Range VIII	1,5 Mc/s 1,0 Mc/s	Range II	21,0 Mc/s 16,2 Mc/s
Range VII	3,1 Mc/s 2,0 Mc/s	Range I	27,0 Mc/s 22,0 Mc/s
Range VI	5,3 Mc/s 4,1 Mc/s		

7.2.8 Remarks

When the alignment is finished, the trimming condensers of the R.F. circuits and the cores of the coils must be hold in the positions, which were found out during alignment. Trimmers will be fixed by means of securing lacquer. For fixing the cores of the coils beeswax must be used. Care must be taken for the temperature of the wax. A temperature too high will cause a deformation of the cores, which cannot be loosened later on. Only a small quantity of wax must be brought between the core and the thread of the coil form.

Cores secured by wax easily may be loosened by means of a six-cornered key from metal, which is moderately warmed up.

Cores, which have already been secured during other alignment, need not to be fixed once again.

7.3 Designation of the types of the iron cores

7.3.1 Cores in the push-button unit

(a) 6 Zub. spk 36 f Si 1 M 6 x 0,75 x 12

(b) Copper cores: length 6 mm, 97 F 9.529

Copper cores will exceptionally be used in cases only, where the inductance of a H.F. coil is too high.

(c) The cores must be adjusted with a screw driver, made from insulating material. Breadth of edge = 3 mm.

7.3.2 Cores in the I.F. stage

(a) Coils Sp 68, 69, 72, 73, 74, 75, 78, 79, 82, 73, 87, 88, 90, 91, 93, 94, 98, 99, 102 and 105.
Type of cores: K 101 E 11-2
The cores have a six-cornered head and must be adjusted with a six-cornered key made from insulating material. (Key width 4 mm).

(b) Coils Sp 64, 65, 66, 67, 80 and 81
Type of cores: GW 5/13 x 0,75 Fk.III g.
Adjustment with a screw driver as described under item 1) part c)

(c) Coil Sp 120
Type of cores: K 101 E 15-3
Adjustment with a key as described under item a)

7.3.3. Core for the note filter

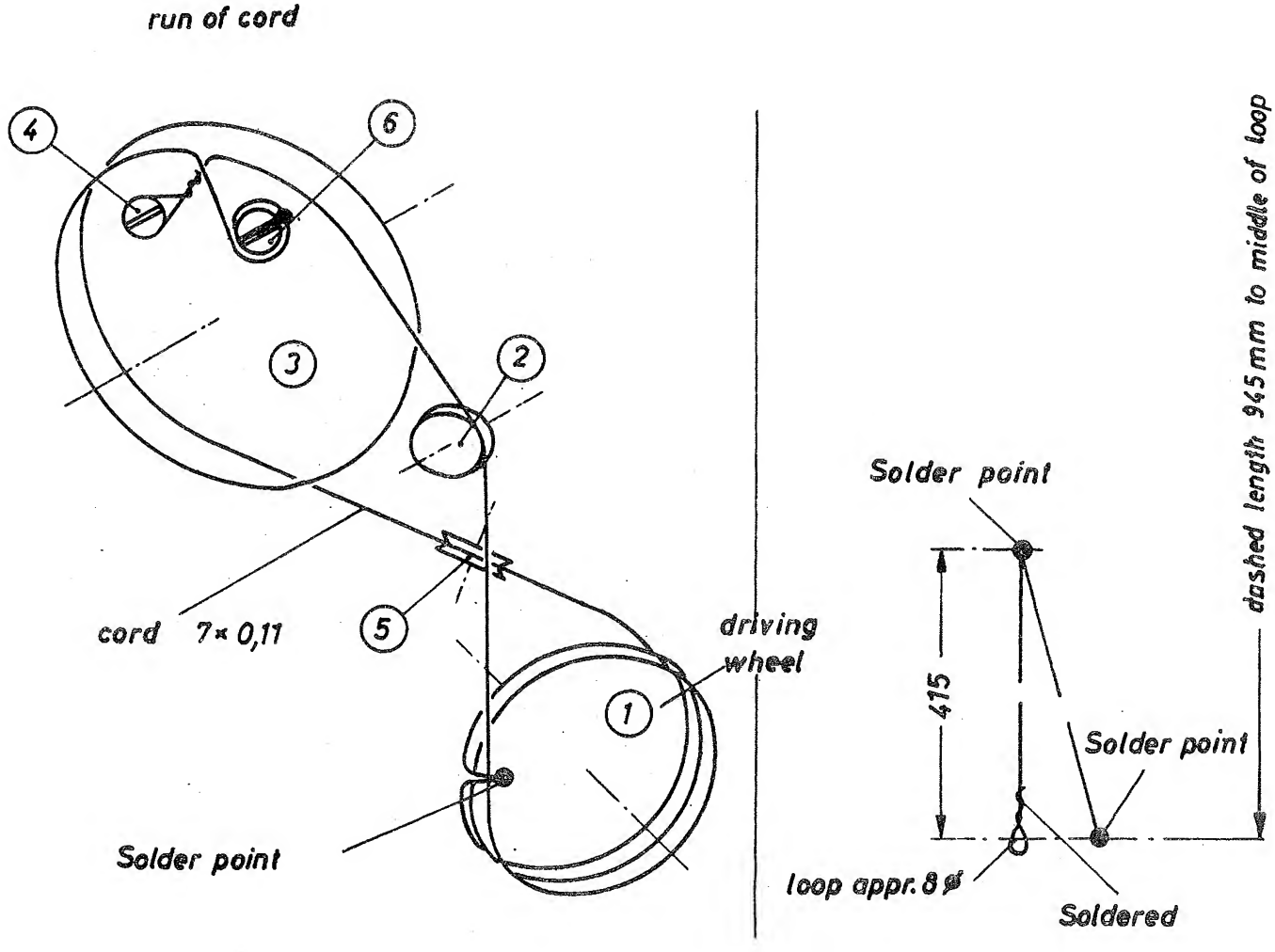
Type: Iron core rod 2.5 x 18 1500 N 4.

7.3.4. Trimming keys

For the adjustment of the trimmer condensers in the push-button unit keys with a sex-cornered head made from insulating material are needed. Key width 5.5 mm.

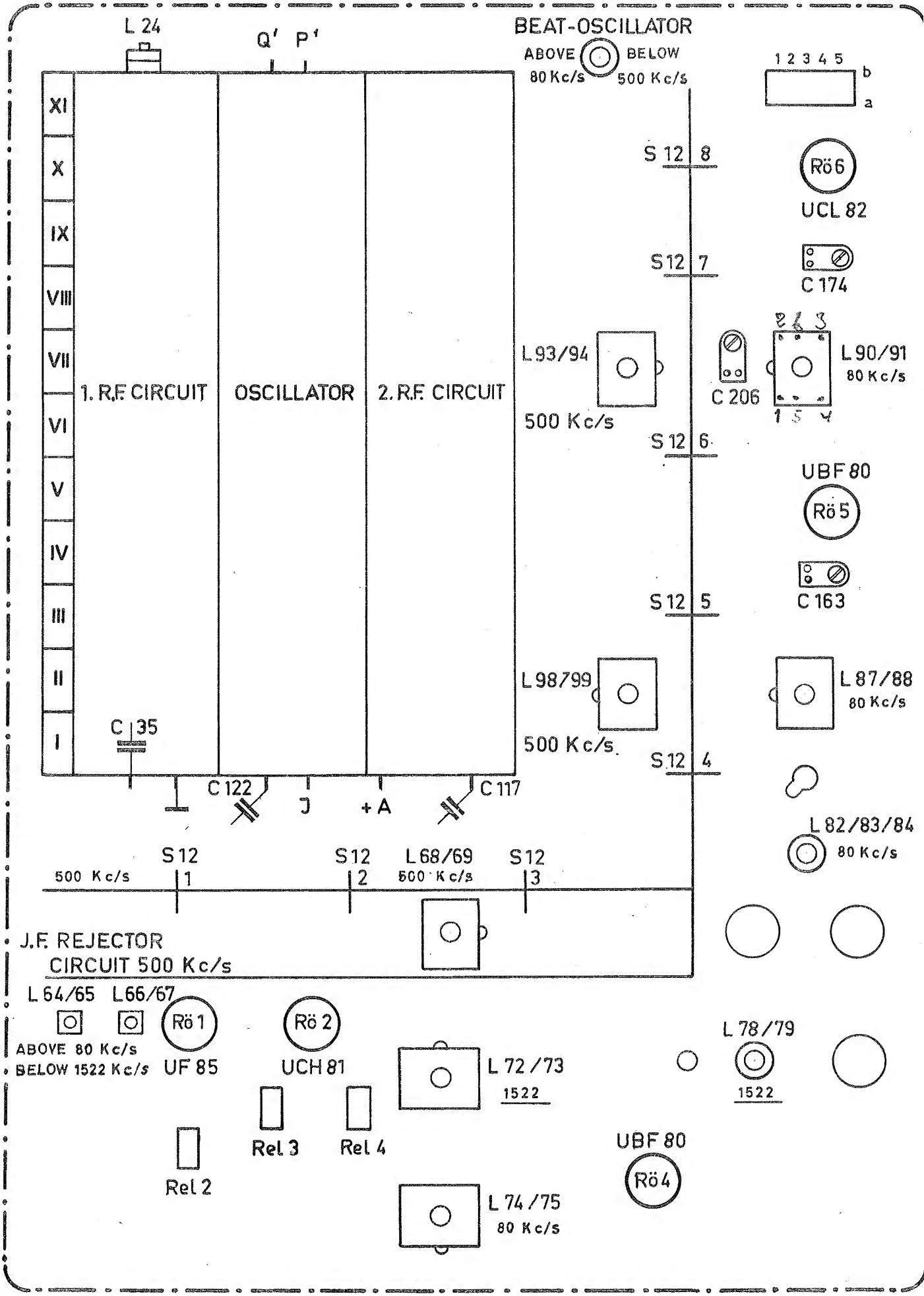
All other trimmers can be adjusted with screw drivers of the usual type.

Verwendet in

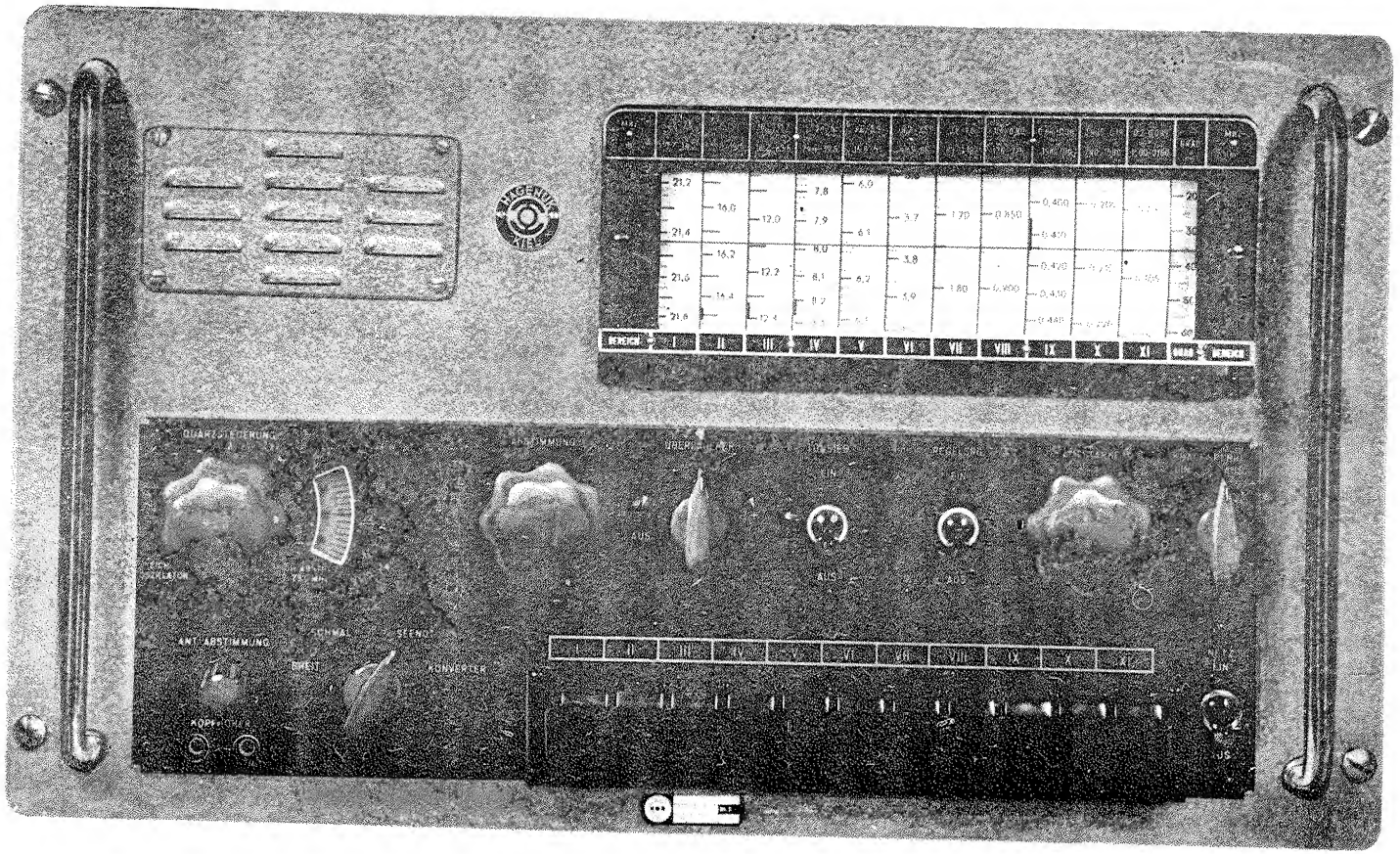


Hierzu gehört 97 E 2.57.23 Bl. 3

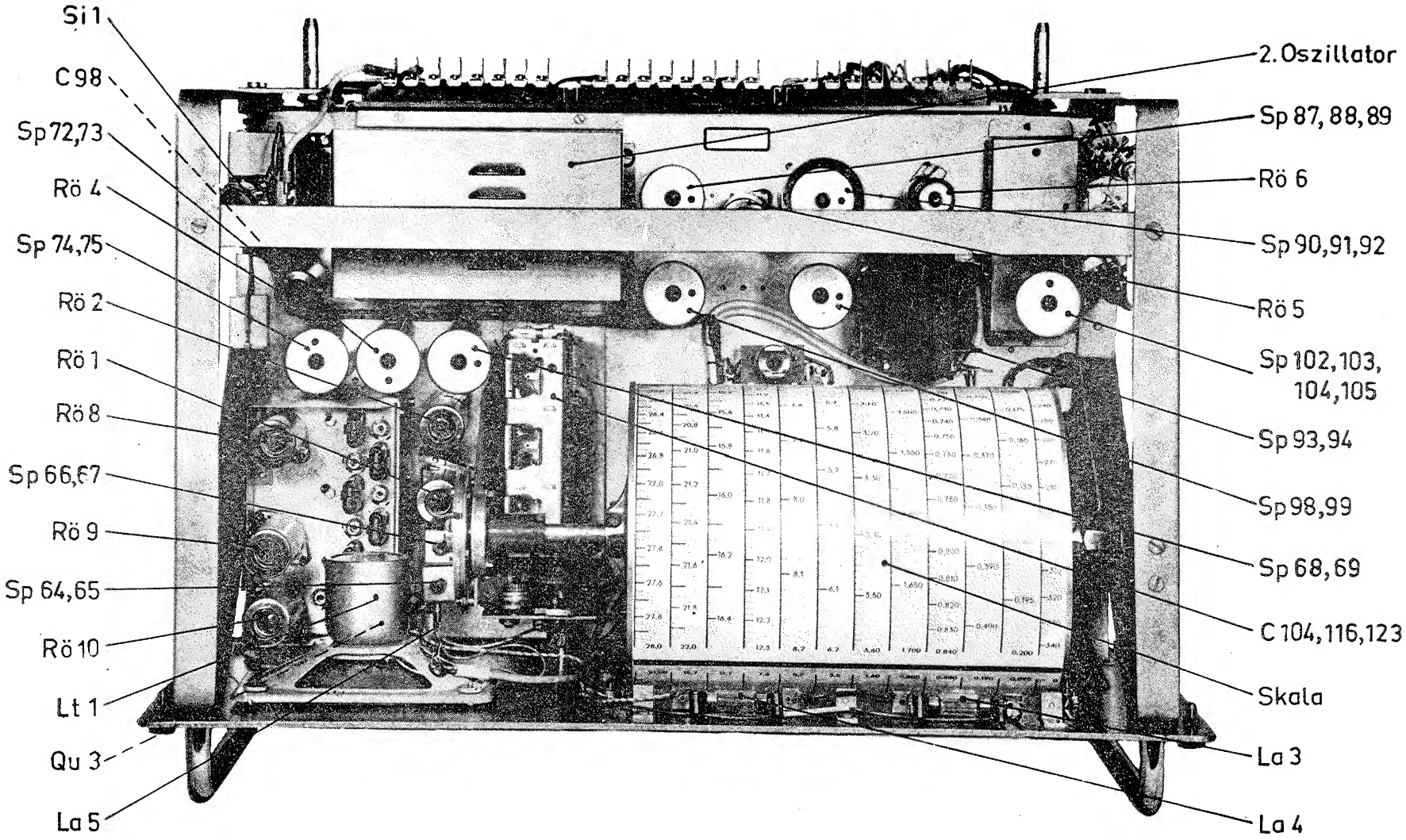
					Maße ohne Toleranzang. nach:		Gewicht	Halbzeug	Werkstoff	
						Tag	Name	Benennung		Maßstab
					Bearb.	1.4.59.	Neumann	e Driving cord assamblage of UE 12		
Buchstabe	Schst. kmt. vor	Änderung	Tag	Name	Gepr.					
					Norm.					
Paßmaß								Zeichnung Nr. 97.53 E 667 Bl.1 engl.		
ob. Abmaß										
u. Abmaß								Ersatz		



UE 12 UNDERSIDE VIEW 97.53 E 798

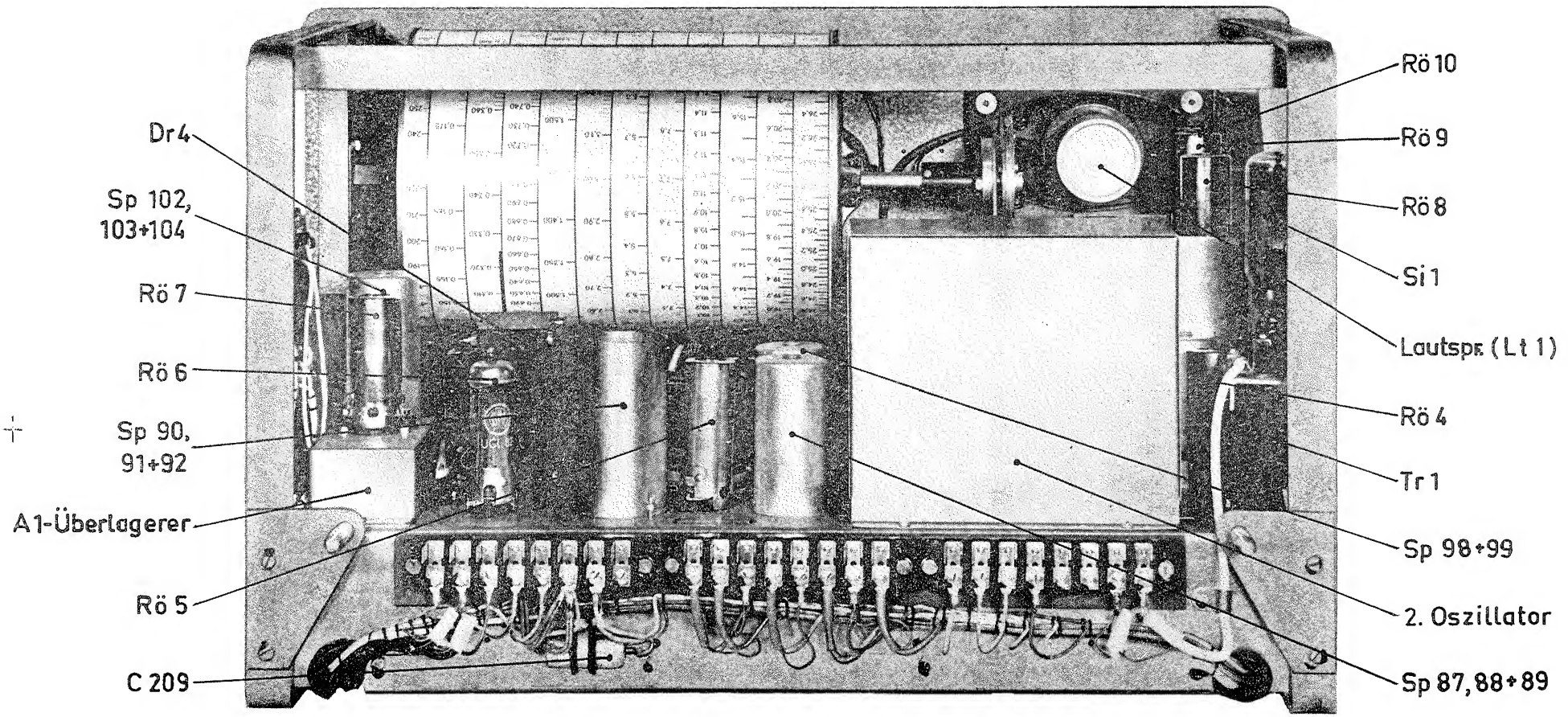


UE 12
Frontansicht



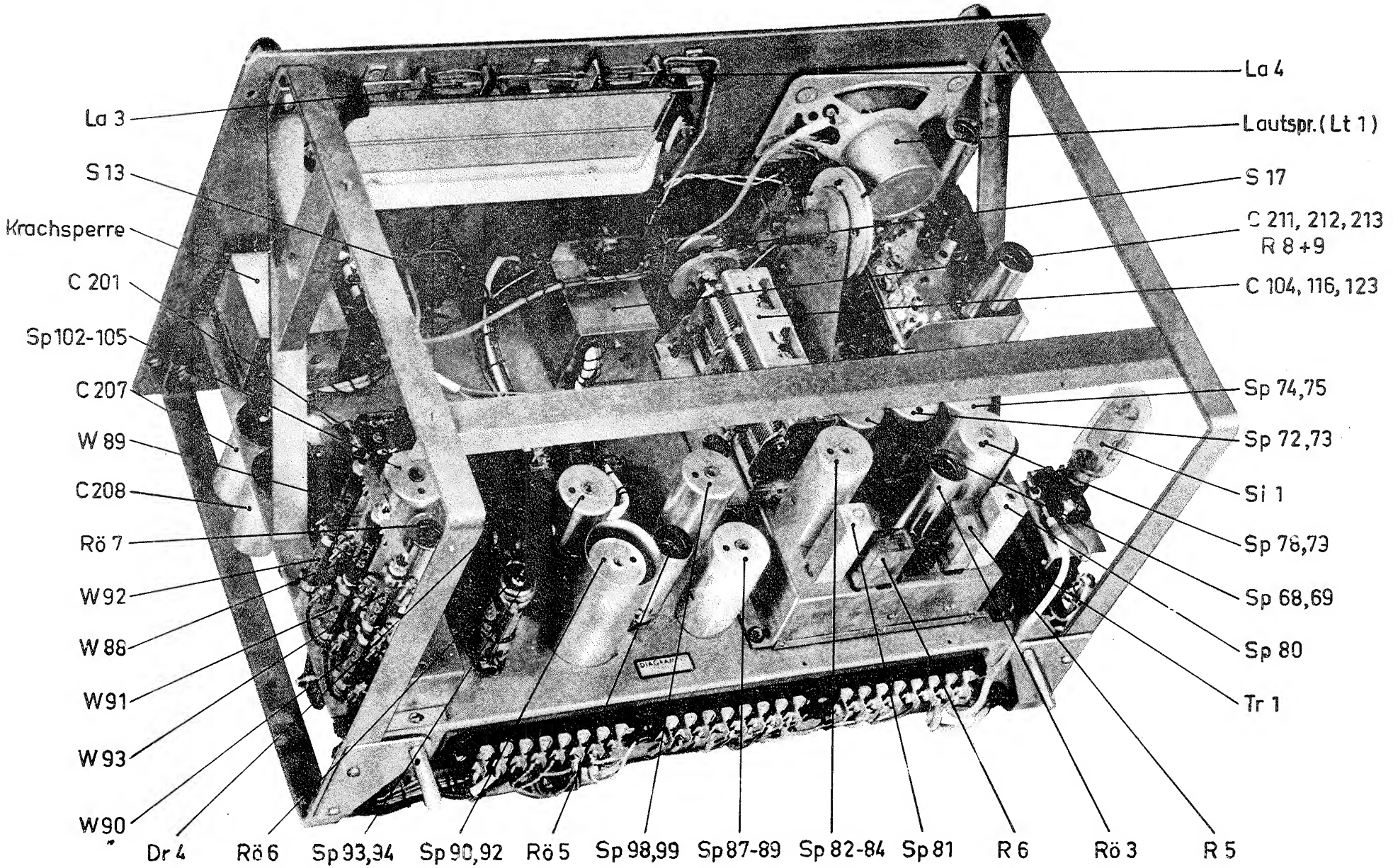
UE 12

Ansicht von oben



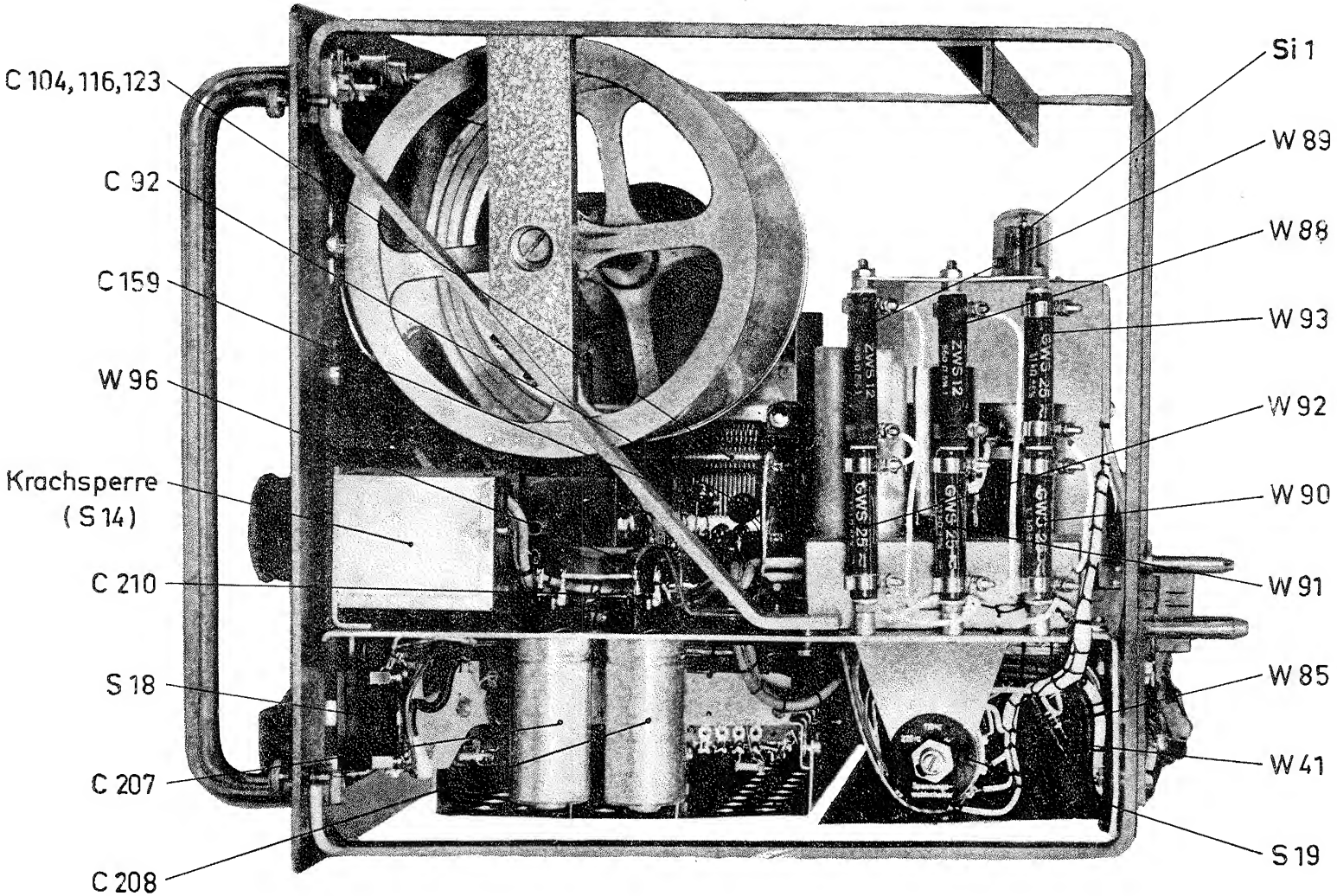
UE 12

Ansicht von hinten



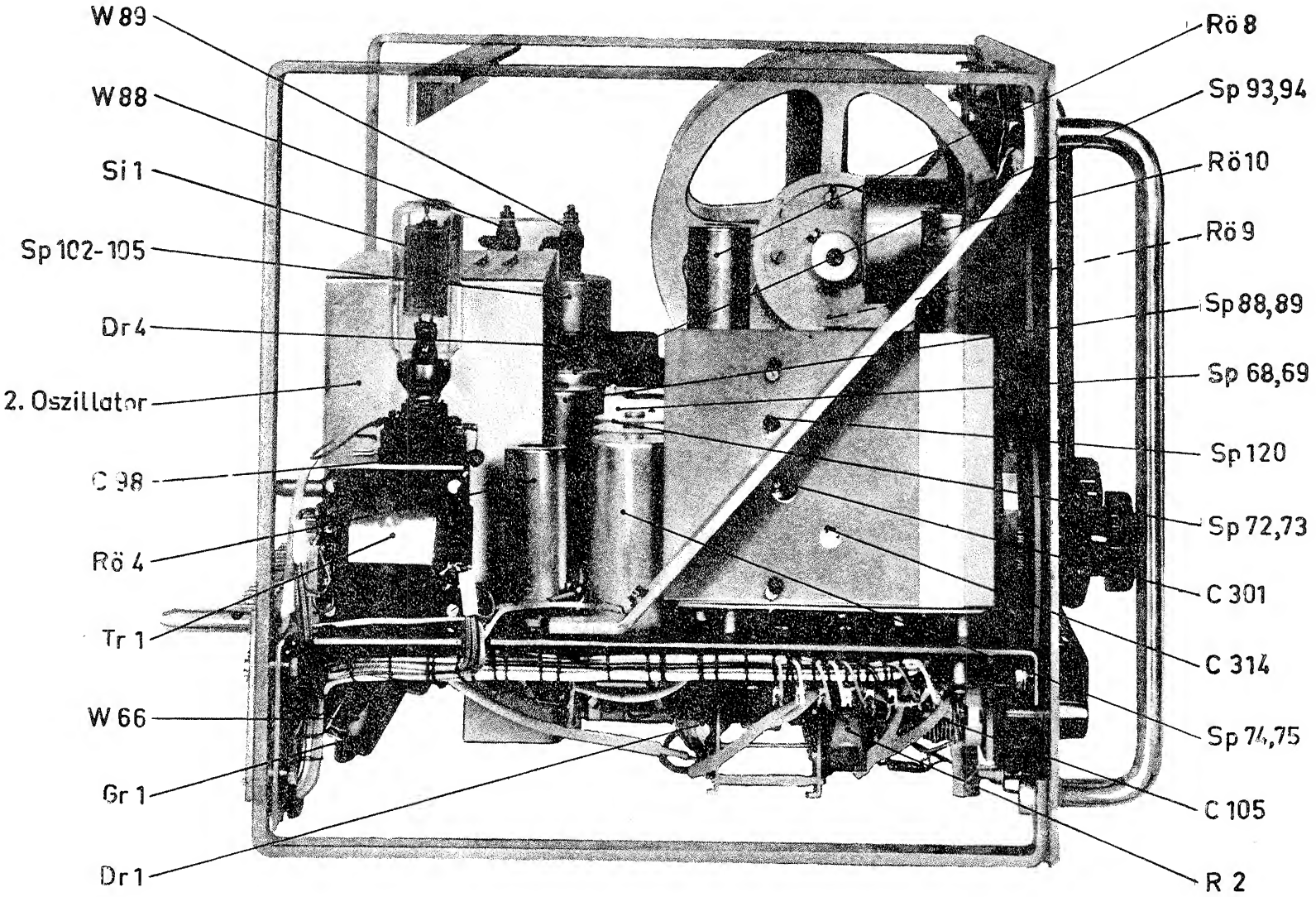
UE 12

Schrägansicht von hinten
ohne Skalentrommel



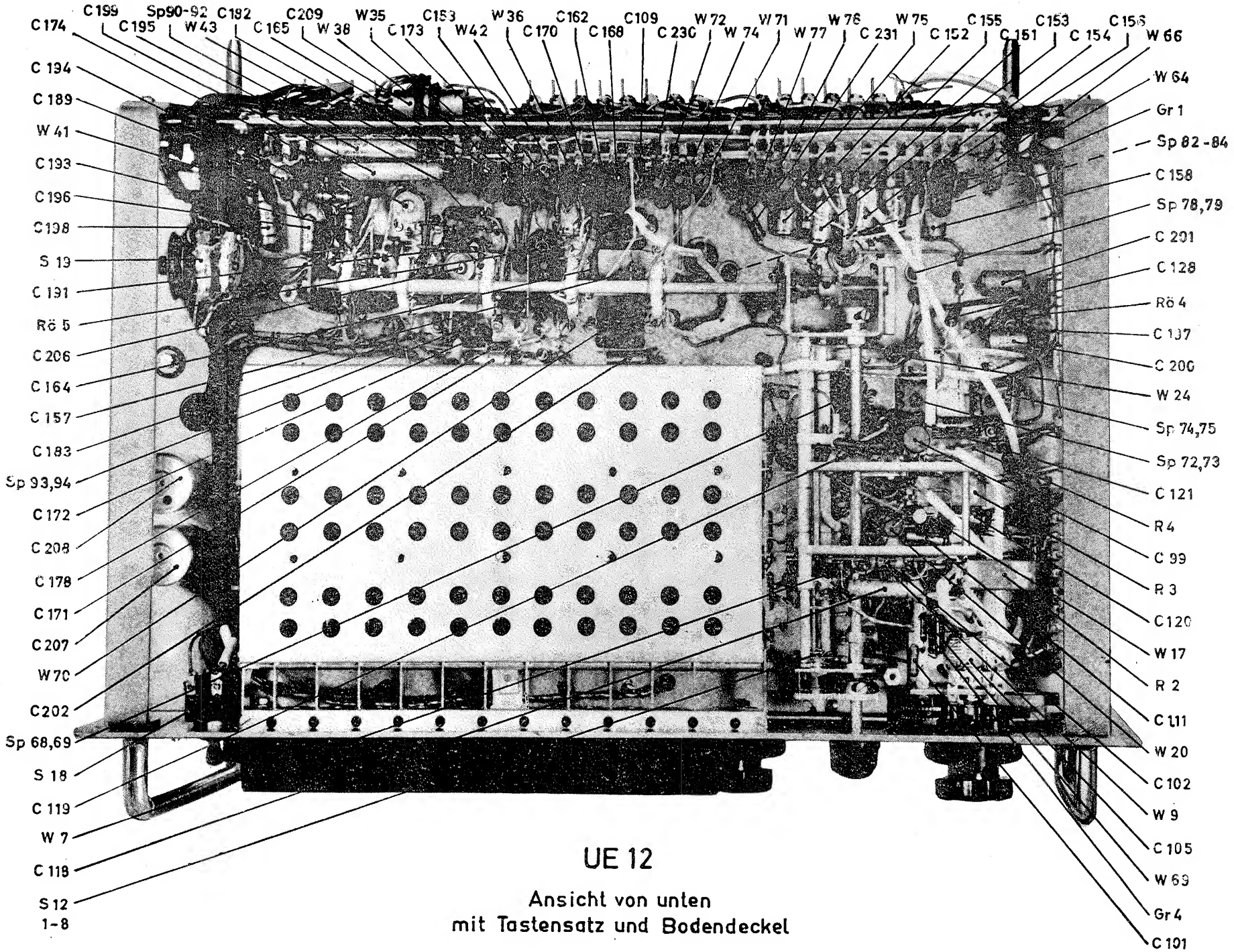
UE 12

Seitenansicht rechts



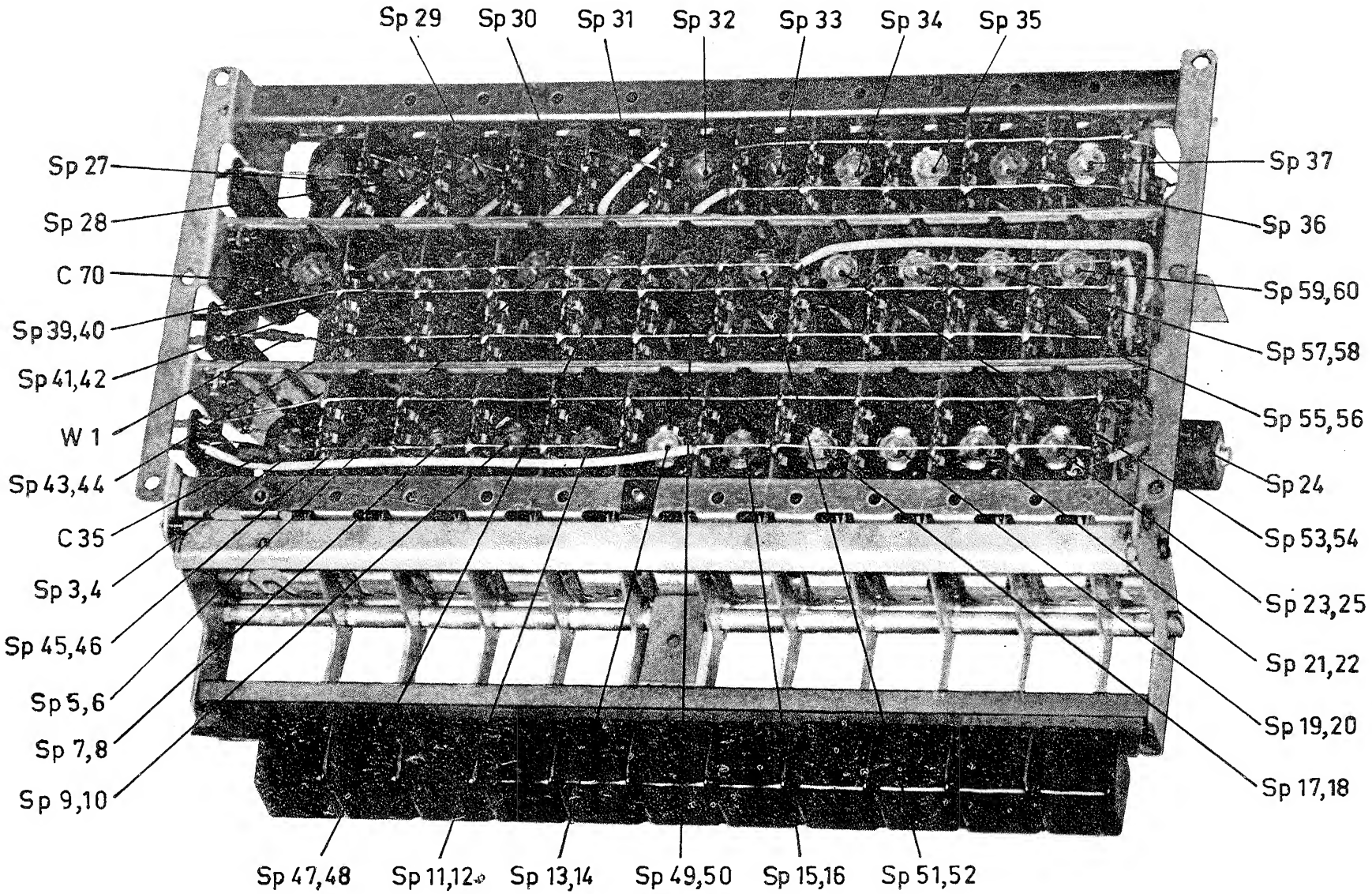
UE 12

Seitenansicht links



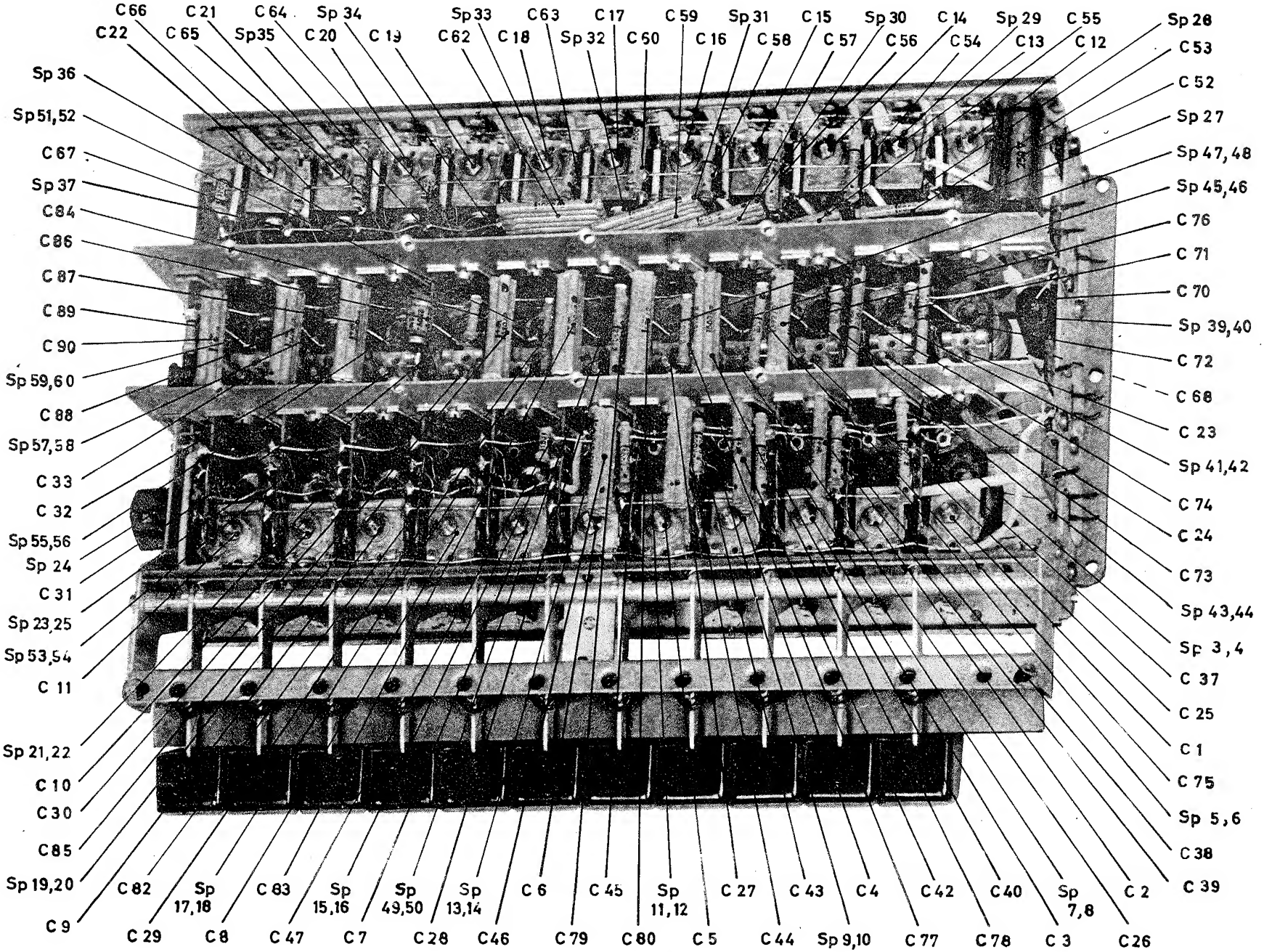
UE 12

Ansicht von unten
mit Tastensatz und Bodendeckel



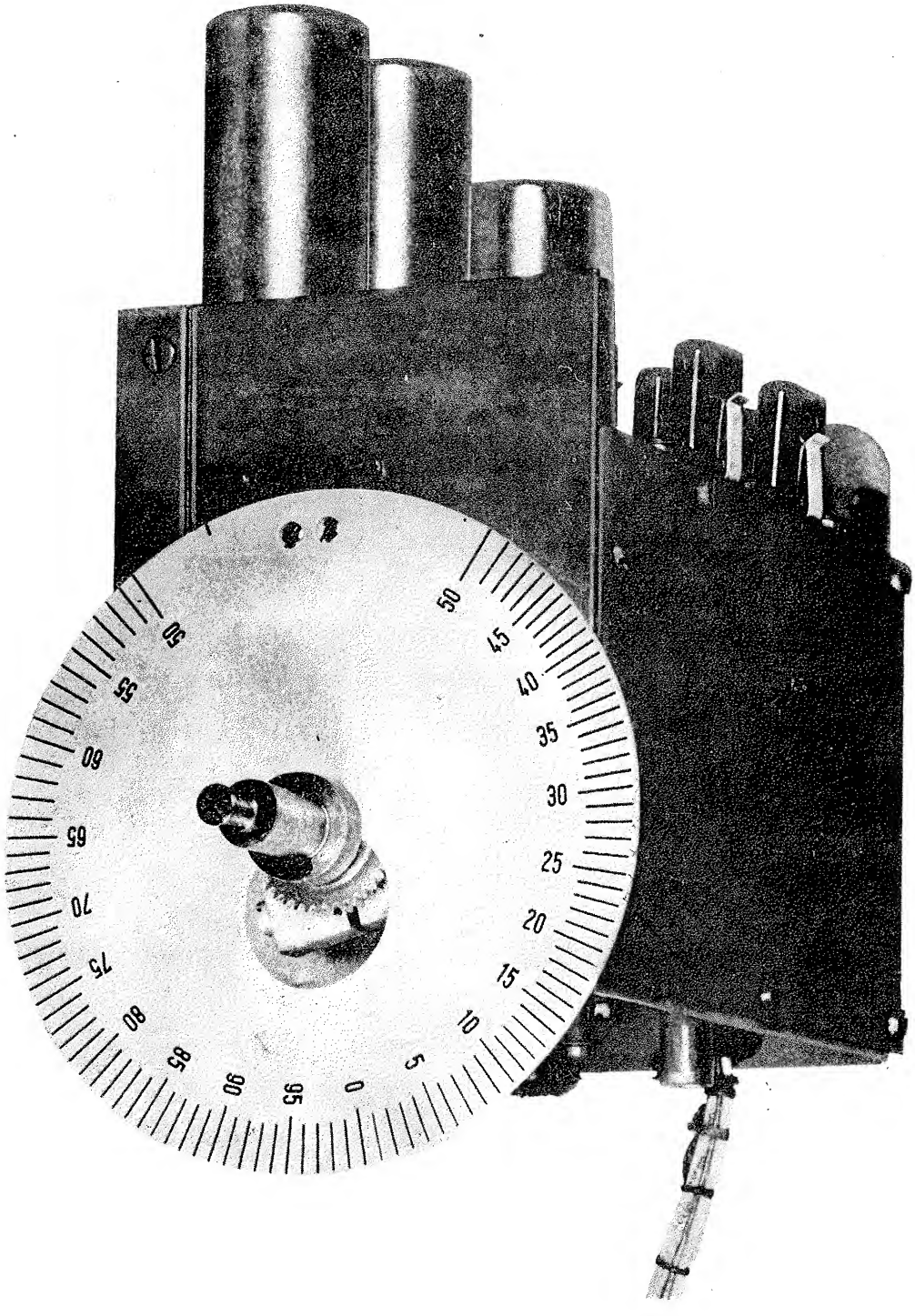
UE 12

Tastensatz Ansicht von oben



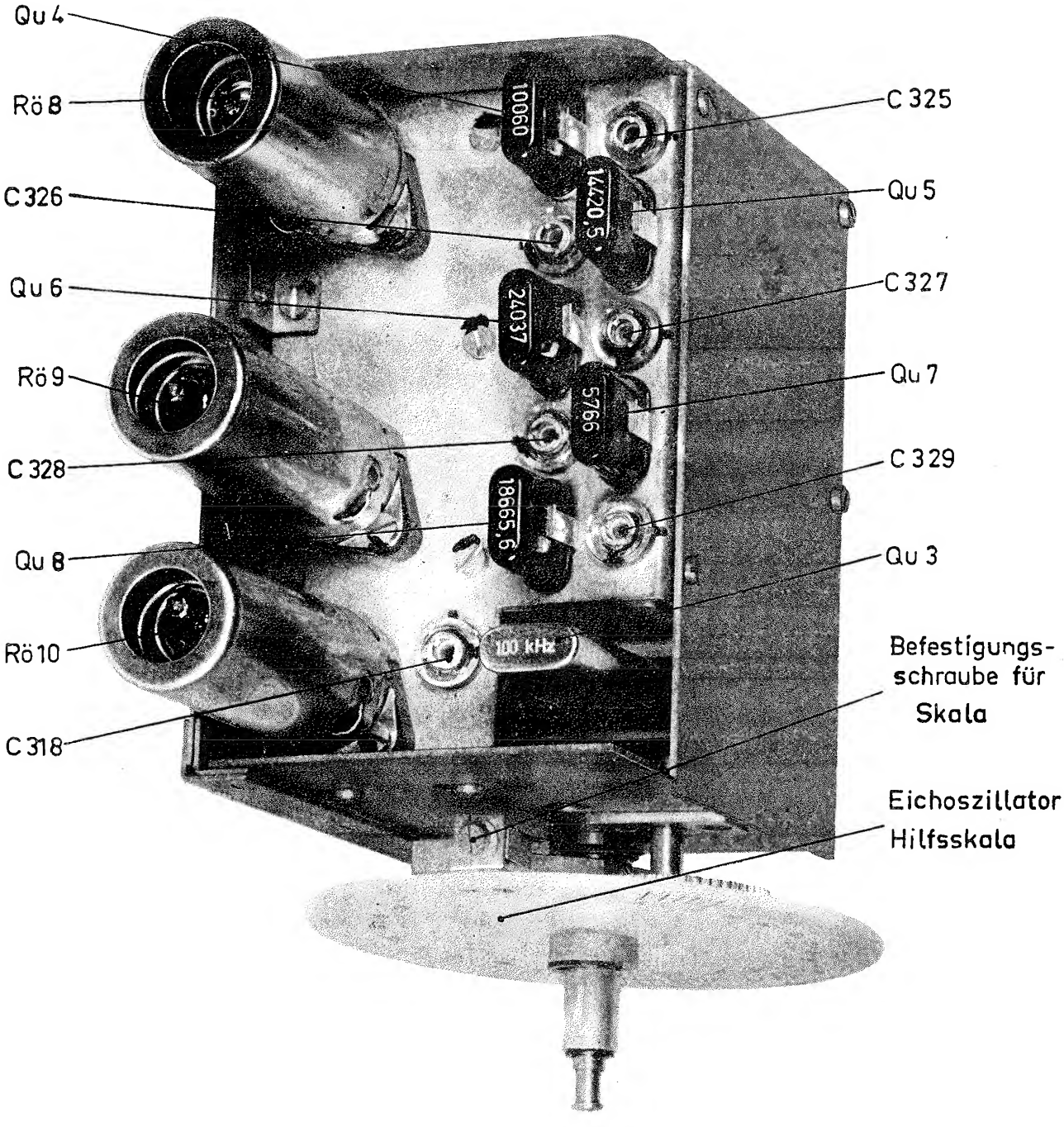
UE 12

Tastensatz Ansicht von unten



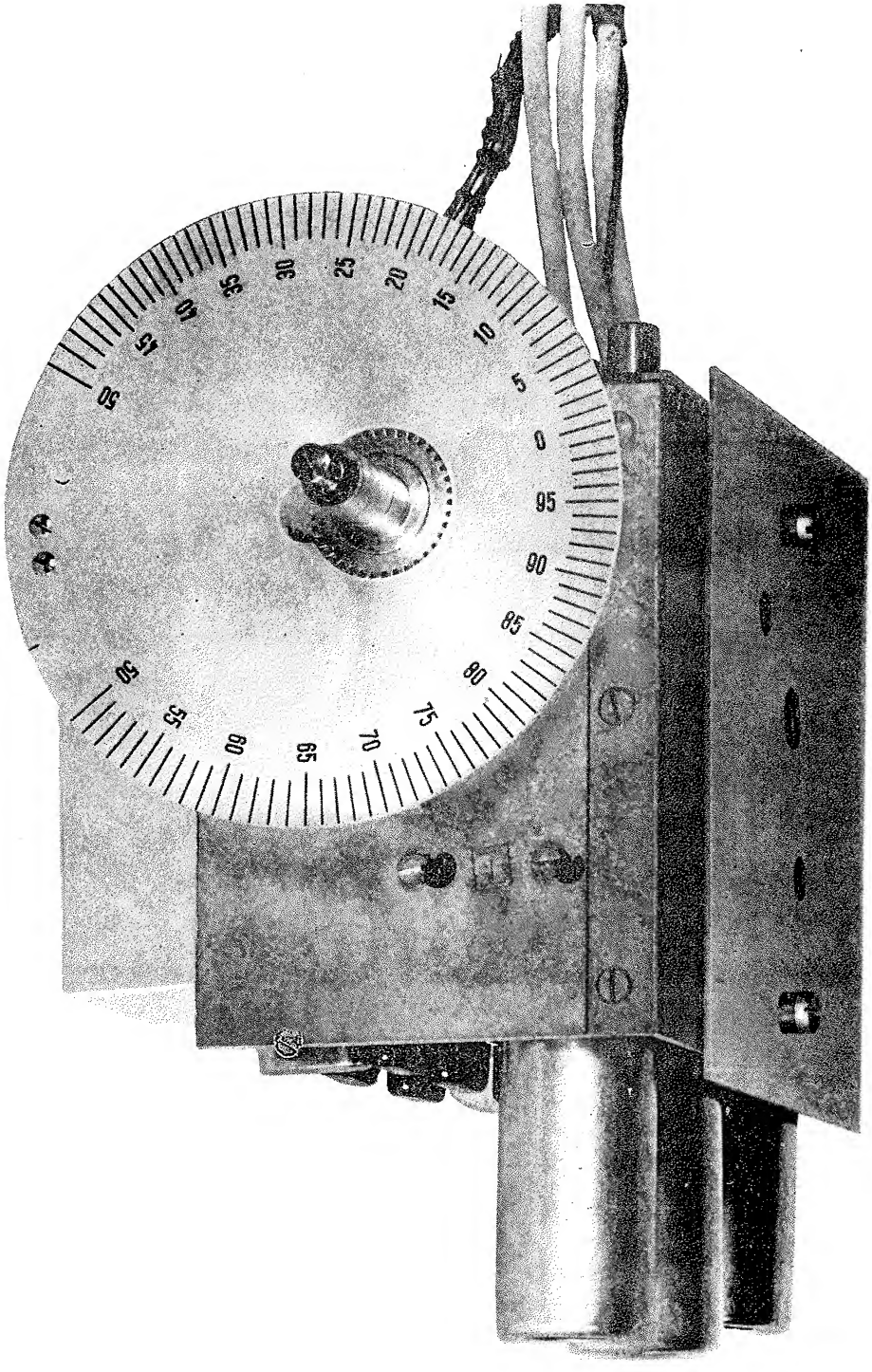
UE 12

Eichoszillator normale
Skalenblattstellung



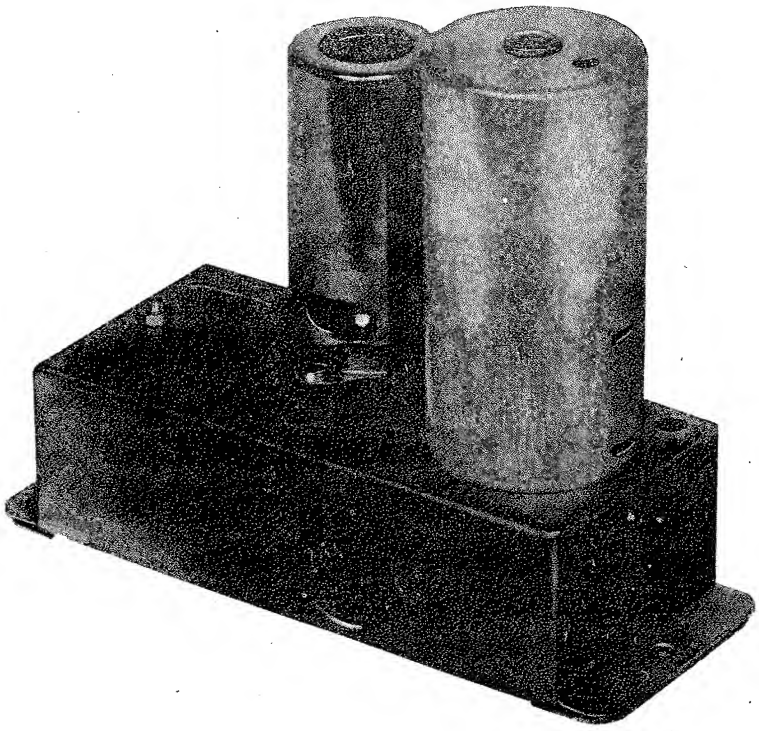
UE 12

Eichoszillator



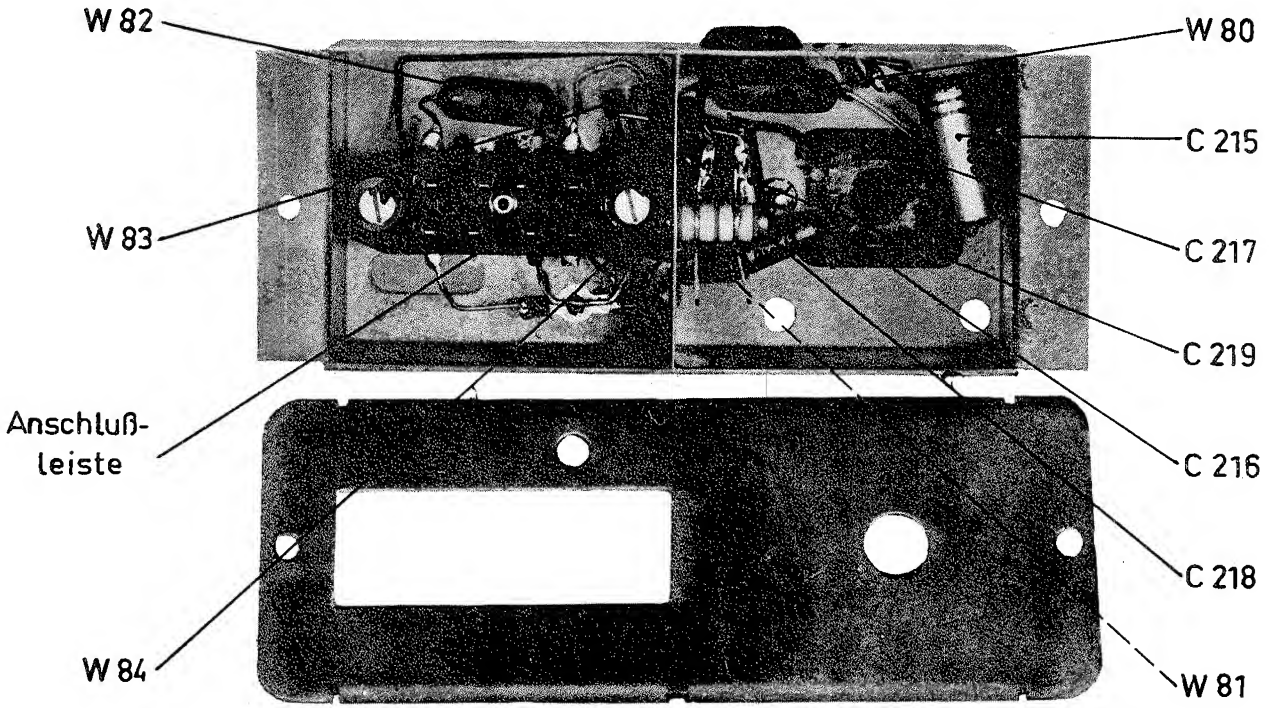
UE 12

Eichoszillator – Skalenblatt in ausgebauter Stellung



UE 12

A1 Überlagerer



UE 12

A1 Überlagerer geöffnet

UE 12

Comparison of designations of components contained in the component lists.

German designation	English designation
Abgleichkondensator	Trimmer
Anschlußleiste	Connection strip
Ausgangstransformator	Output transformer
Berührungsschutz-Kondensator	Capacitor
Beleuchtungslampe	Glow lamp or dial lamp
Bandfilter	Band pass filter
Beat-Schalter	Beat switch
Becherblock	Capacitor
Drehkondensator	Rotary capacitor
Drossel	Choke
Drahtwiderstand	Wire resistor
Durchführungskondensator	Led-through capacitor
Drosselspule	Choke coil
Elektrolyt-Kondensator	Electrolytic capacitor
Federleiste	Terminal
Germaniumdiode	Germanium diode
Glimmlampe	Neon lamp
Keramikkondensator-Batterie	Ceramic capacitor battery
Keramikkondensator	Ceramic capacitor
Kunststoff-Rohrtrimmer	Trimmer
Lötösenleiste	Terminal strip
Lautsprecher	Loudspeaker
Lautsprecher-Schalter	Loud speaker switch
Lufttrimmer	Trimmer
Messerleiste	Knife contacts
Netzdrossel	Mains filter choke
Netz-Schalter	Mains switch
Netztrafo	Mains transformer

German designation	English designation
Oszillator Bereich I (Kopplungsspule)	Oscillator range I coupling coil
Oszillator Bereich I (Kreisspule)	Oscillator range I circuit coil
Papierkondensator	Paper capacitor
Perlkondensator	Capacitor
Platte, vollst.	Switching-over device
Quarz	Crystal
Relais	Relay
Röhre	Valve
Regel-Schalter	A.V.C. switch
Spule	Coil
Schaltbank	Switch bank
Schichtwiderstand	Layer resistor
Schichtdrehwiderstand	Variable layer resistor
Scheibenkondensator	Ceramic capacitor
Stabgleichrichter	Rectifier
Selengleichrichter	Selenium rectifier
Schalter	Switch
Störbegrenzungs-Schalter	Noise limiter switch
Spule - Kopplungsspule	Coupling coil
Spule - Saugkreis	Absorber circuit coil
Spule - Antennenspule	Aerial coil
Spule - Kreisspule	Circuit coil
Steckerleiste	Plug strip
Sicherung	Fuse
1.Vorkreis, Bereich I Antennenspule	Aerial coil, range I, 1.RF-Circuit
1.Vorkreis, Bereich I Kreisspule	Circuit coil, range I, 1 1.RF-circuit
Wahlschalter	Selector switch
Wechselschalter	Change-over switch

Kenn-zeich.	Benennung	Elektr. Werte	Zeichnung Nr. Normen Bezeichn.	Firma Type
1	2	3	4	5
C 1	Abgleichkondensator	5 - 40 pF	Nr. 373	Torotor
C 2	Abgleichkondensator	5 - 40 pF	Nr. 373	Torotor
C 3	Abgleichkondensator	5 - 40 pF	Nr. 373	Torotor
C 4	Abgleichkondensator	5 - 40 pF	Nr. 373	Torotor
C 5	Abgleichkondensator	5 - 40 pF	Nr. 373	Torotor
C 6	Abgleichkondensator	5 - 40 pF	Nr. 373	Torotor
C 7	Abgleichkondensator	5 - 40 pF	Nr. 373	Torotor
C 8	Abgleichkondensator	5 - 40 pF	Nr. 373	Torotor
C 9	Abgleichkondensator	5 - 40 pF	Nr. 373	Torotor
C 10	Abgleichkondensator	5 - 40 pF	Nr. 373	Torotor
C 11	Abgleichkondensator	5 - 40 pF	Nr. 373	Torotor
C 12	Abgleichkondensator	5 - 40 pF	Nr. 376	Torotor
C 13	Abgleichkondensator	5 - 40 pF	Nr. 376	Torotor
C 14	Abgleichkondensator	5 - 40 pF	Nr. 376	Torotor
C 15	Abgleichkondensator	5 - 40 pF	Nr. 376	Torotor
C 16	Abgleichkondensator	5 - 40 pF	Nr. 376	Torotor
C 17	Abgleichkondensator	5 - 40 pF	Nr. 376	Torotor
C 18	Abgleichkondensator	5 - 40 pF	Nr. 376	Torotor
C 19	Abgleichkondensator	5 - 40 pF	Nr. 376	Torotor
C 20	Abgleichkondensator	5 - 40 pF	Nr. 376	Torotor
C 21	Abgleichkondensator	5 - 40 pF	Nr. 376	Torotor
C 22	Abgleichkondensator	5 - 40 pF	Nr. 376	Torotor
C 23	Abgleichkondensator	5 - 40 pF	Nr. 379	Torotor
C 24	Abgleichkondensator	5 - 40 pF	Nr. 379	Torotor
C 25	Abgleichkondensator	5 - 40 pF	Nr. 379	Torotor

Id.Nr.	Spalte	Änderung	Tag	Name

	1961	Tag	Name
Bearb.	8	.5.	Lammer
Gepr.			
Norm.			

KIEL

Schaltteilliste zu: 97 Sa A-2.57.40b

Liste best. aus: 28 Blatt

Schaltteilliste Nr.: 97 Sa 2. 57

Blatt Nr.: 1

Universalempfänger UE 12 (Tastensatz)

Ersatz: F

Kenn-zeich.	Benennung	Elektr. Werte	Zeichnung Nr. Normen Bezeichn.	Firma Type
1	2	3	4	5
C 26	Abgleichkondensator	5 - 40 pF	Nr. 379	Toroto
C 27	Abgleichkondensator	5 - 40 pF	Nr. 379	Toroto
C 28	Abgleichkondensator	5 - 40 pF	Nr. 379	Toroto
C 29	Abgleichkondensator	5 - 40 pF	Nr. 379	Toroto
C 30	Abgleichkondensator	5 - 40 pF	Nr. 379	Toroto
C 31	Abgleichkondensator	5 - 40 pF	Nr. 379	Toroto
C 32	Abgleichkondensator	5 - 40 pF	Nr. 379	Toroto
C 33	Abgleichkondensator	5 - 40 pF	Nr. 379	Toroto
C 35	Keramikkondensator	50 pF/500 V-	N 750/IB Rd 3x10 500 V- 50 pF ±10%	RIG
C 37	Keramikkondensator	150 pF/500 V-	N 33/IB Rd 3x30 500 V- 150pF ±2%	RIG
C 38	Keramikkondensator	70 pF/500 V-	N 33/IB Rd 3x16 500 V- 70pF ±5%	RIG
C 39	Keramikkondensator-batterie	300 pF/500 V-	N 75/IB 2 Stück Rd 3x25 500V- 300pF ±2% 035/207I	RIG
C 40	Keramikkondensator	130 pF/500 V-	N 33/IB Rd 3x25 500 V- 130pF ±2%	RIG
C 42	Keramikkondensator-batterie	510 pF/500 V-	N 75/IB 3 Stück Rd 3x30 500V- 510pF ±2% 035/050II	RI
C 43	Keramikkondensator	50 pF/500 V-	N 33/IB Rd 3x14 500 V- 50 pF ±5%	RIG
C 44	Keramikkondensator-batterie	845 pF/500 V-	N150/IB 4 Stück Rd 3x30 500V- 845pF ±2% 035/050IV	RI
C 45	Keramikkondensator	100 pF/500 V-	N 33/IB Rd 3x20 500V- 100pF ±2%	RIG
C 46	Keramikkondensator-batterie	845 pF/500 V-	N 150/IB 4 Stück Rd 3x30 500V- 845pF±2%035/050IV	RIG
C 47	Keramikkondensator	30 pF/500 V-	NP 0/IB Rd 3x12 500V- 30 pF ±5%	RIG

Id.Nr.	Spalte	Änderung	Tag	Name

	Tag	Name
1961	/e	
Bearb.	8.5.	Lammers
Gepr.		
Norm.		

HAGENUK KIEL

Schaltteilliste zu: 97 Sa A 2.57.40 b

Liste best. aus: Blatt

Schaltteilliste Nr.: 97 Sa 2. 57

Blatt Nr.: 2

Universalempfänger UE 12 (Tastensatz)

Ersatz: F

Kenn-zeich.	Benennung	Elektr. Werte	Zeichnung Nr. Normen Bezeichn.	Firma Type
1	2	3	4	5
C 51	Keramikkondensator	50 pF/500 V-	N 150/IB Rd 3x14 500V- 50pF ±5%	RIG
C 52	Papierkondensator	0,25 µF/250 V-	Kc 425/2	ERO
C 53	Keramikkondensator	150 pF/500 V-	N 33/IB Rd 3x30 500V- 150pF ±2%	RIG
C 54	Keramikkondensator	130 pF/500 V-	N 33/IB Rd 3x25 500V- 130pF ±2%	RIG
C 55	Keramikkondensator-batterie	300 pF/500 V-	N75/IB 2Stück Rd3x25 500V- 300pF ±2% 035/207I	RIG
C 56	Keramikkondensator-batterie	150 pF/500 V-	N33/IB 2Stück Rd3x20 500V- 150pF ±2% 035/049I	RIG
C 57	Keramikkondensator-batterie	510 pF/500 V-	N75/IB 3Stück Rd3x30 500V- 510pF±2%035/050III	RIG
C 58	Keramikkondensator	100 pF/500 V-	N33/IB Rd 3x20 500 V- 100 pF ±2%	RIG
C 59	Keramikkondensator-batterie	974 pF/500 V-	N150/IB 5StückRd3x30 500V- 974pF±2%035/050VIII	RIG
C 60	Keramikkondensator-batterie	220 pF/500 V-	N33/IB 2Stück Rd3x25 500V- 220pF ±2% 035/207I	RIG
C 62	Keramikkondensator-batterie	1000 pF/500V-	N150/IB 5Stück Rd3x30 500V- 1000pF±2%035/050VIII	RIG
C 63	Keramikkondensator	120 pF/500 V-	N 33/IB Rd 3x25 500V- 120pF ±2%	RIG
C 64	Keramikkondensator	20 pF/500 V-	NP 0/IB Rd 3x10 500 V- 20pF ±5%	RIG
C 65	Keramikkondensator	30 pF/500 V-	NP 0/IB Rd 3x12 500 V- 30pF ±5%	RIG
C 66	Keramikkondensator	40 pF/500 V-	NP 0/IB Rd 3x12 500 V- 40pF ±5%	RIG
C 67	Keramikkondensator	30 pF/500 V-	NP 0/IB Rd 3x12 500 V- 30pF ±5%	RIG
C 68	Papierkondensator	1 nF/1000 V-	Kc 210/10	ERO
C 70	Papierkondensator	0,1 µF/250 V-	Kc 410/2	ERO
C 71	Keramikkondensator	40 pF/500 V-	N 470/IB Rd 3x12 500 V- 40pF ±5%	RIG
C 72	Keramikkondensator	170,5 pF/500 V-	N 75/IB Rd 3x30 500V- 170,5pF ±1%	RIG
C 73	Keramikkondensator	70 pF/500 V-	N 220/IB Rd 3x14 500V- 70pF ±5%	RIG
C 74	Keramikkondensator-batterie	276 pF/500 V-	N33/IB 2Stück Rd3x25 500V- 276pF ±1% 035/207I	RIG
C 75	Keramikkondensator	130 pF/500 V-	N 75/IB Rd 3x25 500 V- 130pF ±2%	RIG

	Tag	Name
196	We	
Bearb.	8.5.	Lammers
Gepr.		
Norm.		

Schaltteilliste zu: 97 Sa A 2.57.40 b

Liste best. aus: Blatt

Schaltteilliste Nr.: 97 Sa 2. 57

Blatt Nr.: 3

Universalempfänger UE 12 (Tastensatz)

Ersatz

F

Id.Nr.	Spalte	Ausgabe Nr.	Tag	Name
		F		

HAGENUK KIEL

Kenn-zeich.	Benennung	Elektr. Werte	Zeichnung Nr. Normen Bezeichn.	Firma Typ
1	2	3	4	5
C 76	Keramikkondensator-batterie	392 pF/500 V-	N75/IB 3Stück Rd3x25 500V- 392pF +1%035/207II	RIG
C 77	Keramikkondensator	100 pF/500 V-	N 150/IB Rd 3x20 500 V- 100pF ±2%	RIG
C 78	Keramikkondensator-batterie	613 pF/500 V-	N150/IB 3Stück Rd3x30 500V- 613pF±2%035/050 II	RIG
C 79	Keramikkondensator-batterie	250 pF/500 V-	N33/IB 2Stück Rd3x30 500V- 250pF±2%035/050 I	RIG
C 80	Keramikkondensator-batterie	650 pF/500 V-	N150/IB 4Stück Rd3x25 500V- 650pF±2%035/207 IV	RIG
C 82	Keramikkondensator	130 pF/500 V-	N 75/IB Rd 3x25 500 V- 130 pF ±2%	RIG
C 83	Keramikkondensator-batterie	1605 pF/500 V-	N470/IB 6Stück Rd3x30 500V- 1605pF±2%035/054 I	RIG
C 84	Keramikkondensator	30 pF/500 V-	N 330/IB Rd 3x12 500V- 30 pF ±5%	RIG
C 85	Keramikkondensator-batterie	631 pF/500 V-	N330/IB 4Stück Rd3x25 500V- 631pF ±2%035/207IV	RIG
C 86	Papierkondensator	5250/5/250	DIN 41161	Kunkler
C 87	Keramikkondensator-batterie	2630 pF/500 V-	N750/IB 8Stück Rd3x30 500V- 2630pF±2%035/054 VI	RIG
C 88	Keramikkondensator-batterie	1460 pF/500 V-	N470/IB 6Stück Rd3x30 500V- 1460pF ±2%035/054I	RIG
C 89	Keramikkondensator	30 pF/500 V-	N 750/IB Rd 3x10 500 V- 30 pF ±5%	RIG
C 90	Keramikkondensator-batterie	776pF/500 V-	N330/IB 3Stück Rd3x30 500V- 776pF±2%035/050 II	RIG
S 1 - S 11	Schaltbank		97 F 2.57.41 - 1	HAGENUK

Id.Nr.	Spalte	Änderung	Tag	Name

	1961	Tag	Name
Bearb.		8.5.	Lammer
Gepr.			
Norm.			

HAGENUK KIEL

Schaltteilliste zu: 97 Sa A 2.57.40 b

Liste best. aus: Blatt

Schaltteilliste Nr.: 97 Sa 2. 57

Blatt Nr.: 4

Universalempfänger UE 12 (Tastensatz)

Ersatz: F

Kenn-zeich.	Benennung	Elektr. Werte	Zeichnung Nr. Normen Bezeichn.	Firma Type
1	2	3	4	5
Sp 3	1.Vorkreis Bereich I (Antennenspule)		97 F 2.57.42	HAGENUK
Sp 4	1.Vorkreis Bereich I (Kreisspule)		97 F 2.57.42	HAGENUK
Sp 5	1. Vorkreis BereichII (Antennenspule)		97 F 2.57.46	HAGENUK
Sp 6	1. Vorkreis BereichII (Kreisspule)		97 F.2.57.46	HAGENUK
Sp 7	1.Vorkreis BereichIII (Antennenspule)		97 F 2.57.50	HAGENUK
Sp 8	1.Vorkreis BereichIII (Kreisspule)		97 F 2.57.50	HAGENUK
Sp 9	1.Vorkreis BereichIV (Antennenspule)		97 F 2.57.54	HAGENUK
Sp 10	1.Vorkreis BereichIV (Kreisspule)		97 F 2.57.54	HAGENUK
Sp 11	1.Vorkreis Bereich V (Antennenspule)		97 F 2.57.58	HAGENUK
Sp 12	1.Vorkreis Bereich V (Kreisspule)		97 F 2.57.58	HAGENUK
Sp 13	1.Vorkreis BereichVI (Antennenspule)		97 F 2.57.62	HAGENUK
Sp 14	1.Vorkreis BereichVI (Kreisspule)		97 F 2.57.62	HAGENUK
Sp 15	1.Vorkreis BereichVII (Antennenspule)		97 F 2.57.66	HAGENUK
Sp 16	1.Vorkreis BereichVII (Kreisspule)		97 F 2.57.66	HAGENUK
Sp 17	1.Vorkreis BereichVIII (Antennenspule)		97 F 2.57.70	HAGENUK
Sp 18	1.Vorkreis BereichVIII (Kreisspule)		97 F 2.57.70	HAGENUK
Sp 19	1.Vorkreis BereichIX (Antennenspule)		97 F 2.57.74	HAGENUK
Sp 20	1.Vorkreis BereichIX (Kreisspule)		97 F 2.57.74	HAGENUK
Sp 21	1.Vorkreis Bereich X (Antennenspule)		97 F 2.57.78	HAGENUK
Sp 22	1.Vorkreis Bereich X (Kreisspule)		97 F 2.57.78	HAGENUK
Sp 23	1.Vorkreis BereichXI (Antennenspule)		97 F 2.57.82	HAGENUK
Sp 24	Spule (Antennenspule)		97 F 2.57.86	HAGENUK
Sp 25	1.Vorkreis BereichXI (Kreisspule)		97 F 2.57.82	HAGENUK
Sp 27	2.Vorkreis Bereich I (Kreisspule)		97 F 2.57.44	HAGENUK

Id.Nr.	Spalte	Änderung	Tag	Name

	1961	Tag	Name
Bearb.		8.5.	Lammers
Gepr.			
Norm.			

HAGENUK KIEL

Schaltteilliste zu: 97 Sa A 2.57.40 b

Liste best. aus Blatt

Schaltteilliste Nr.: 97 Sa 2. 57

Blatt Nr. 5

Universalempfänger UE 12 (Tastensatz)

Ersatz: F

Kenn-zeich.	Benennung	Elektr. Werte	Zeichnung Nr. Normen Bezeichn.	Firma Type
1	2	3	4	5
Sp 28	2.Vorkreis BereichII (Kreisspule)		97 F 2.57.48	HAGENUK
Sp 29	2.Vorkreis BereichIII (Kreisspule)		97 F 2.57.52	HAGENUK
Sp 30	2.Vorkreis BereichIV (Kreisspule)		97 F 2.57.56	HAGENUK
Sp 31	2.Vorkreis Bereich V (Kreisspule)		97 F 2.57.60	HAGENUK
Sp 32	2.Vorkreis BereichVI (Kreisspule)		97 F 2.57.64	HAGENUK
Sp 33	2.Vorkreis BereichVII (Kreisspule)		97 F 2.57.68	HAGENUK
Sp 34	2.Vorkreis BereichVIII (Kreisspule)		97 F 2.57.72	HAGENUK
Sp 35	2.Vorkreis BereichIX (Kreisspule)		97 F 2.57.76	HAGENUK
Sp 36	2.Vorkreis Bereich X (Kreisspule)		97 F 2.57.80	HAGENUK
Sp 37	2.Vorkreis Bereich XI (Kreisspule)		97 F 2.57.84	HAGENUK
Sp 39	Oszillator Bereich I (Kopplungsspule)		97 F 2.57.43	HAGENUK
Sp 40	Oszillator Bereich I (Kreisspule)		97 F 2.57.43	HAGENUK
Sp 41	Oszillator BereichII (Kopplungsspule)		97 F 2.57.47	HAGENUK
Sp 42	Oszillator BereichII (Kreisspule)		97 F 2.57.47	HAGENUK
Sp 43	Oszillator Bereich III (Kopplungsspule)		97 F 2.57.51	HAGENUK
Sp 44	Oszillator Bereich III (Kreisspule)		97 F 2.57.51	HAGENUK
Sp 45	Oszillator BereichIV (Kopplungsspule)		97 F 2.57.55	HAGENUK
Sp 46	Oszillator BereichIV (Kreisspule)		97 F 2.57.55	HAGENUK
Sp 47	Oszillator Bereich V (Kopplungsspule)		97 F 2.57.59	HAGENUK
Sp 48	Oszillator Bereich V (Kreisspule)		97 F 2.57.59	HAGENUK
Sp 49	Oszillator BereichVI (Kopplungsspule)		97 F 2.57.63	HAGENUK
Sp 50	Oszillator BereichVI (Kreisspule)		97 F 2.57.63	HAGENUK
Sp 51	Oszillator BereichVII (Kopplungsspule)		97 F 2.57.67	HAGENUK
Sp 52	Oszillator BereichVII (Kreisspule)		97 F 2.57.67	HAGENUK

Id.Nr.	Spalte	Änderung	Tag	Name

196	Tag	We Name
Bearb.	8.5.	Lammers
Gepr.		
Norm.		

HAGENUK KIEL

Schaltteilliste zu 97 Sa A 2.57.40 b

Liste best. aus

Blatt

Schaltteilliste Nr. 97 Sa 2. 57

Blatt Nr. 6

Universalempfänger UE 12 (Tastensatz)

Ersatz F

Kenn-zeich.	Benennung	Elektr. Werte	Zeichnung Nr. Normen Bezeichn.	Firma Type
1	2	3	4	5
Sp 53	Oszillator BereichVIII (Kopplungsspule)		97 F 2.57.71	HAGENUK
Sp 54	Oszillator BereichVIII (Kreisspule)		97 F 2.57.71	HAGENUK
Sp 55	Oszillator BereichIX (Kopplungsspule)		97 F 2.57.75	HAGENUK
Sp 56	Oszillator BereichIX (Kreisspule)		97 F 2.57.75	HAGENUK
Sp 57	Oszillator Bereich X (Kopplungsspule)		97 F 2.57.79	HAGENUK
Sp 58	Oszillator Bereich X (Kreisspule)		97 F 2.57.79	HAGENUK
Sp 59	Oszillator BereichXI (Kopplungsspule)		97 F 2.57.83	HAGENUK
Sp 60	Oszillator BereichXI (Kreisspule)		97 F 2.57.83	HAGENUK
W 1	Schichtwiderstand	47 Ohm E 12 0,3W	TI N 339.1 - 12	

Id.Nr.	Spalte	Änderung	Tag	Name

	Tag	Name
961	We	
Bearb.	8.5.	Lammers
Gepr.		
Norm.		

HAGENUK KIEL

Schaltteilliste zu: 97 Sa A 2.57.40 b

Liste best. aus Blatt

Schaltteilliste Nr.: 97 Sa 2. 57

Blatt Nr. 7

Universalempfänger UE 12 (Tastensatz)

Ersatz

F

Kennzeich.	Benennung	Elektr. Werte	Zeichnung Nr. Normen Bezeichn.	Firma Type
1	2	3	4	5
Bu 1	Anschlußleiste		N 45102	Mozar
C 97	Papierkondensator	10 nF/250 V-	Kc 310/2	ERO
C 98	Papierkondensator	470 pF/1000 V-	Kc 147/10	ERO
C 99	Scheibenkondensator	2,2 nF/500 V-	R4000 Sa 12Ø 50% 500V- 2200pF ±20%	RIG
C 100	Keramikkondensator	200 pF/500 V-	N 150/IB Rd 3x30 500V- 200pF ±2%	RIG
C 101	Keramikkondensator	50 pF/500 V-	N 150/IB Rd 3x14 500V- 50pF ±2%	RIG
C 102	Papierkondensator	470 pF/1000 V-	Kc 147/10	ERO
C 103	Keramikkondensator	200 pF/500 V-	N 150/IB Rd 3x30 500V- 200pF ±2%	RIG
C 104	Drehkondensator	12 - 443 pF	3UGB 430Baueinheit m.C116+C 123Achslg.15	Torotor
C 105	Drehkondensator	50 pF Achsende Form C n.DIN E 41450Achslg.38 Typ220A 1 Schraubbuchse10mmlänger Hopt		
C 106	Keramikkondensator	100 pF/500 V-	N 750/IB Rd 3x14 500V- 100pF ±10%	RIG
C 107	Papierkondensator	47 nF/250 V-	Kc 347/2	ERO
C 108	Keramikkondensator	20 pF/500 V-	N 150/IB Rd 3x10 500V- 20pF ±5%	RIG
C 109	Papierkondensator	1 nF/1000 V-	Kc 210/10	ERO
C 110	Papierkondensator	0,1 µF/250 V-	Kc 410/2	ERO
C 111	Papierkondensator	47 nF/250 V-	Kc 347/2	ERO
C 112	Papierkondensator	1 nF/1000 V-	Kc 210/10	ERO
C 113	Keramikkondensator-batterie	200 pF/500 V-	N33/IB 2Stück Rd 3x20 500V- 200pF±2% 035/258 I	RIG
C 114	Papierkondensator	47 nF/250 V-	Kc 347/2	ERO
C 115	Keramikkondensator-batterie	200 pF/500 V-	N33/IB 2Stück Rd 3x20 500V- 200pF±2% 035/258I	RIG
C 116	Drehkondensator	12 - 443 pF	3UGB 430Baueinheit m.C104+C 123Achslg.15	Torotor
C 117	Keramikkondensator	100 pF/500 V-	N 750/IB Rd 3x14 500V- 100pF ±10%	RIG
C 118	Elektrolytkondensator	25 µF/35/40 V-	25/35 B 41951	Siemens
C 119	Keramikkondensator	10 nF/500 V-	R4000 Rd3x25 ±50% 500V-10000pF ±20%	RIG
C 120	Papierkondensator	47 nF/250 V-	Kc 347/2	ERO

			Schaltteilliste zu 97 Sa A 2.57	Liste best. aus Blatt
	1961 Tag We Name			
	Bearb. 8.5. Lammers		Schaltteilliste Nr. 97 Sa 2.57	Blatt Nr. 8
	Gepr.			
	Norm.			
			Universalempfänger UE 12 (Empfänger)	
F				
Id.Nr. Spalte Ausgabe Nr. Tag Name			Ersatz F	

Kenn-zeich.	Benennung	Elektr. Werte	Zeichnung Nr. Normen Bezeichn.	Firma Type
1	2	3	4	5
C 121	Papierkondensator	0,1 µF/250 V-	Kc 410/2	ERO
C 122	Keramikkondensator	100 pF/500 V-	N 150/IB Rd 3x20 500V- 100pF ±10%	RIG
C 123	Drehkondensator	15 - 446 pF	3UGB 430Baueinheit m. C 104+C 116	Achslg.15 Torotor
C 124	Keramikkondensator	100 pF/500 V-	N 33/IB Rd 3x20 500V- 100pF ±2%	RIG
C 125	Keramikkondensator-batterie	400 pF/500 V-	N33/IB 3Stück Rd 3x25 500V- 400pF±2%035/260III	RIG
C 126	Papierkondensator	47 nF/250 V-	Kc 347/2	ERO
C 127	Keramikkondensator	100 pF/500 V-	N 33/IB Rd 3x20 500 V- 100pF ±2%	RIG
C 128	Papierkondensator	10 nF/250 V-	Kc 310/2	ERO
C 129	Scheibenkondensator	2,2 nF/500 V-	R 4000 Sa 12Ø 50% 500V- 2200pF ±20%	RIG
C 130	Keramikkondensator-batterie	400 pF/500 V-	N33/IB 3Stück Rd 3x25 500V- 400pF±2%035/260III	RIG
C 148	Scheibenkondensator	2,2 nF/500 V-	R 4000 Sa 12Ø 50% 500V- 2200pF ±20%	RIG
C 149	Scheibenkondensator	2,2 nF/500 V-	R 4000 Sa 12Ø 50% 500V- 2200pF ±20%	RIG
C 151	Papierkondensator	0,1 µF/250 V-	Kc 410/2	ERO
C 152	Papierkondensator	0,1 µF/250 V-	Kc 410/2	ERO
C 153	Papierkondensator	0,1 µF/250 V-	Kc 410/2	ERO
C 154	Papierkondensator	0,1 µF/250 V-	Kc 410/2	ERO
C 155	Papierkondensator	0,1 µF/250 V-	Kc 410/2	ERO
C 156	Papierkondensator	0,1 µF/250 V-	Kc 410/2	ERO
C 157	Papierkondensator	10 nF /250 V-	Kc 310/2	ERO
C 158	Papierkondensator	0,1 µF/250 V-	Kc 410/2	ERO
C 159	Papierkondensator	0,1 µF/250 V-	Kc 410/2	ERO
C 160	Keramikkondensator-batterie	400 pF / 500V-	N33/IB 3Stück Rd 3x25 500V- 400pF±2%035/260III	RIG

Id.Nr.	Spalte	Ausgabe Nr.	Tag	Name
		F		

	Tag	Name
1961		
Bearb.	8.5.	Lammer
Gepr.		
Norm.		

HAGENUK KIEL

Schaltteilliste zu
97 Sa A 2.57

Liste best. aus

Blatt

Schaltteilliste Nr.
97 Sa 2.57

Blatt Nr.
9

Universalempfänger UE 12
(Empfänger)

Ersatz F

Kenn-zeich.	Benennung	Elektr. Werte	Zeichnung Nr. Normen Bezeichn.	Firma Type
1	2	3	4	5
C 161	Keramikkondensator-batterie	400 pF/500 V-	N33/IB 3Stück Rd 3x25 500V- 400pF±2%035/260III	RIG
C 162	Keramikkondensator	70 pF/500 V-	N75/IB Rd 3x16 500V- 70pF ±5%	RIG
C 163	Trimmer	10 - 45 pF	16 Triko 10/45D90	Stettner
C 164	Keramikkondensator	70 pF/500 V-	N 75/IB Rd 3x16 500V- 70 pF ±5%	RIG
C 165	Papierkondensator	47 nF/250 V-	Kc 347/2	ERO
C 166	Keramikkondensator	100 pF/500 V-	N 750/IB Rd 3x14 500V- 100pF ±10%	RIG
C 167	Keramikkondensator	50 pF/500 V-	N 150/IB Rd 3x14 500V- 50 pF ±10%	RIG
C 168	Papierkondensator	0,1 µF/250 V-	Kc 410/2	ERO
C 169	Scheibenkondensator	2,2 nF/500 V-	R 4000 Sa 12Ø +50% 500V- 2200pF -20%	RIG
C 170	Papierkondensator	0,1 µF/250 V-	Kc 410/2	ERO
C 171	Elektrolytkondensator	25 µF/35/40 V-	25/35 B 41951	Siemens
C 172	Keramikkondensator	50 pF/500 V-	N 750/IB Rd 3x10 500V- 50pF ±10%	RIG
C 173	Papierkondensator	47 nF/250 V-	Kc 347/2	ERO
C 174	Trimmer	10 - 45 pF	16 Triko 10/45D90	Stettner
C 175	Keramikkondensator	70 pF/500 V-	N75/IB Rd 3x16 500V- 70pF ±5%	RIG
C 176	Keramikkondensator-batterie	400 pF/500 V-	N33/IB 3Stück Rd 3x25 500V- 400pF±2%035/260III	RIG
C 177	Keramikkondensator-batterie	400 pF/500 V-	N33/IB 3Stück Rd 3x25 500V- 400pF±2%035/260III	RIG
C 178	Keramikkondensator	10 pF/500 V-	N 150/IB Rd 3x10 500V- 10pF ±1 pF	RIG
C 179	Papierkondensator	0,1 µF/250 V-	Kc 410/2	ERO
C 180	Keramikkondensator-batterie	200 pF/500 V-	N33/IB 2Stück Rd 3x20 500V- 200pF±2%035/258 I	RIG
C 181	Keramikkondensator-batterie	200 pF/500 V-	N33/IB 2Stück Rd 3x20 500V- 200pF±2%035/258 I	RIG
C 182	Papierkondensator	47 nF/250 V-	Kc 347/2	ERO
C 183	Keramikkondensator	100 pF/500 V-	N 750/IB Rd 3x14 500V- 100pF ±10%	RIG
C 184	Keramikkondensator	100 pF/500 V-	N 750/IB Rd 3x14 500V- 100pF ±10%	RIG
C 185	Papierkondensator	22 nF/250 V-	Kc 322/2	ERO

	Tag	We	Name
196			
Bearb.	8.5.		Lammers
Gepr.			
Norm.			

Schaltteilliste zu: 97 Sa A 2.57

Liste best. aus: Blatt

Schaltteilliste Nr.: 97 Sa 2. 57

Blatt Nr.: 10

Universalempfänger UE 12 (Empfänger)

Ersatz: F

F

Id.Nr. | Spalte | Ausgabe Nr. | Tag | Name

HAGENUK KIEL

Kenn-zeich.	Benennung	Elektr. Werte	Zeichnung Nr. Normen Bezeichn.	Firma Type
1	2	3	4	5
C 186	Papierkondensator	22 nF/250 V-	Kc 322/2	ERO
C 187	Papierkondensator	47 nF/250 V-	Kc 347/2	ERO
C 188	Papierkondensator	10 nF/250 V-	Kc 310/2	ERO
C 189	Elektrolytkondensator	10 µF/15/18 V-	10/15 B 41951	Siemens
C 190	Elektrolytkondensator	1 µF 350/380 V-	D 1/350 B 4371-5	Siemens
C 191	Keramikkondensator	20 pF/500 V-	N 150/IB Rd 3x10 500 V- 20 pF ±5%	RIG
C 192	Papierkondensator	0,1 µF/10% 250V-	Kc 410/2	ERO
C 193	Papierkondensator	10 nF/250 V-	Kc 310/2	ERO
C 194	Papierkondensator	10 nF/250 V-	Kc 310/2	ERO
C 195	Elektrolytkondensator	50 µF/35/40 V-	50/35 B 41951	Siemens
C 196	Papierkondensator	10 pF/630 V-	Kc 310/6	ERO
C 197	Keramikkondensator	100 pF/500 V-	N 750/IB Rd 3x14 500V- 100pF ±10%	RIG
C 198	Papierkondensator	0,1 µF/250 V-	Kc 410/2	ERO
C 199	Elektrolytkondensator	4 µF/350/380 V-	4/350 B 4371	Siemens
C 200	Papierkondensator	0,1 µF/250 V-	Kc 410/2	ERO
C 201	Papierkondensator	0,1 µF/250 V-	Kc 410/2	ERO
C 202	Papierkondensator	47 nF/250 V-	Kc 347/2	ERO
C 203	Keramikkondensator-batterie	200 pF/500 V-	N33/IB 2Stück Rd 3x20 500V- 200pF±2%035/258 I	RIG
C 204	Keramikkondensator-batterie	200 pF/500 V-	N33/IB 2Stück Rd 3x20 500V- 200pF±2%035/258 I	RIG
C 205	Papierkondensator	47 nF/630 V-	Kc 347/6	ERO
C 206	Trimmer	10 - 45 pF	16 Triko10/45 D 90	Stettner
C 207	Elektrolytkondensator	50 µF/350/380 V-	B4369-5 mit Federscheibe D31B4402	Siemens
C 208	Elektrolytkondensator	50 µF/350/380 V-	B4369-5 mit Federscheibe D31B4402	Siemens
C 209	Berührungsschutz-Kondensator	4,7 nF/4000 V	nach VDE 0560/2 Ausf. a	ERO
C 210	Papierkondensator	22 nF/630 V-	Kc 322/6	ERO

		196 Tag We Name	Schaltteilliste zu 97 Sa A 2.57	Liste best. aus Blatt
		Bearb. 8.5. Lammers	Schaltteilliste Nr. 97 Sa 2.57	Blatt Nr. 11
		Gepr.		
		Norm.	Universalempfänger UE 12 (Empfänger)	
F			Ersatz F	
97/65	5.10.62			
Id.Nr. Spalte	Ausgabe Nr. Tag Name			

Kennzeich.	Benennung	Elektr. Werte	Zeichnung Nr. Normen Bezeichn.	Firma Type
1	2	3	4	5
C 230	Papierkondensator	10 nF/250 V-	Kc 310/2	ERO
C 231	Papierkondensator	10 nF/250 V-	Kc 310/2	ERO
Dr 1	Drossel	0,5 mH	97 E 2.57.108	HAGENUK
Dr 4	Netzdrossel	19 Hy	97 E 2.57.07	HAGENUK
Dr 6	Drossel		VK 200-20	Valvo
Dr 7	Drossel		VK 200-20	Valvo
Gr 1	Stabgleichrichter	165 V / 30 mA	E 165 C 30	AEG
Gr 2	Germaniumdiode	115 V	OA 81	Valvo
Gr 3	Selengleichrichter	250/250 mA	V 125 C 250 ~~Kc 2, 7a 21/8-2,5~~	Siemens
Gr 4	Germaniumdiode	- 20 V	OA 180	Telefunken
Gr 5	Germaniumdiode	- 20 V	OA 180	Telefunken
La 3	Beleuchtungslampe	18 V / 0,1 A	Nr. 3365	Osram
La 4	Beleuchtungslampe	18 V / 0,1 A	Nr. 3365	Osram
La 5	Beleuchtungslampe	18 V / 0,1 A	Nr. 3365	Osram
L 1	Messerleiste		8 N 116.541.241	HAGENUK
L 2	Messerleiste		8 N 116.541.241	HAGENUK
L 3	Messerleiste		8 N 116.541.241	HAGENUK
L 7	Federleiste		B 8 DIN 41622	

		196 Tag	We Name	Schaltteilliste zu 97 Sa A 2.57	Liste best. aus Blatt
		Bearb.	8.5. Lammert	Schaltteilliste Nr. 97 Sa 2. 57	Blatt Nr. 12
		Gepr.			
		Norm.			
F		HAGENUK KIEL		Universalempfänger UE 12 (Empfänger)	
97/961	17.10.61 Neu.			Ersatz F	
Id Nr. Spalte	Ausgabe Nr. Tag Name				

Kenn-zeich.	Benennung	Elektr. Werte	Zeichnung Nr. Normen Bezeichn.	Firma Type
1	2	3	4	5
L 8	Lötösenleiste		97 F 2. 57. 110	HAGENUK
Lt 1	Lautsprecher	5 Ohm/2,5 Watt	PM 130x75/16 GOT tropenfest	Wigo
R 2	Relais	≷14 mA	1200-10200-0,07CuL Nr.532 ≷14mA 2xu Au/Ni	Haller
R 3	Relais	≷14 mA	1200-10200-0,07CuL Nr.532 ≷14mA 2xu Au/Ni	Haller
R 4	Relais	≷14 mA	1200-10200-0,07CuL Nr.532 ≷14mA 2xu Au/Ni	Haller
Rö 1	Röhre		UF 85	Valvo
Rö 2	Röhre		UCH 81	Valvo
Rö 4	Röhre		UBF 80	Valvo
Rö 5	Röhre		UBF 80	Valvo
Rö 6	Röhre		UCL 82	Valvo
S 12/ 1-3	Schalter		97 E 2.57.11	HAGENUK
S 12/ 4-8	Schalter		97 D 2.57.12	HAGENUK
S 13	Regel-Schalter	Wechselschalter	Nr. 2042	Hochköpper
S 14	Störbegrenzer-Schalter		97 F 2.57.21-5 97 E 2.57.21-6	Mayr
S 15	Tonsieb-Schalter	Wechselschalter	Nr. 2042	Hochköpper
S 16	Lautsprecher-Schalter	Schiebeumschalter 1pol. 12V/7 A	Baueinheit mit W 40 und W 54	Preh

	Tag	Name
196	We	
Bearb.	8.5.	Lammers
Gepr.		
Norm.		

Schaltteilliste zu: 97 Sa A 2.57

Liste best. aus: Blatt

Schaltteilliste Nr.: 97 Sa 2. 57

Blatt Nr.: 13

Universalempfänger UE 12 (Empfänger)

Ersatz: F

F

97/65 5.10.62 H.

Id.Nr. | Spalte | Ausgabe Nr. | Tag | Name

HAGENUK KIEL

Kennzeich.	Benennung	Elektr. Werte	Zeichnung Nr. Normen Bezeichn.	Firma Type
1	2	3	4	5
S 18	Netz-Schalter	Ausschalter 2pol.	Nr. 2044	Hochköpper
S 19	Schalter		97 E 2.57-29	HAGENUK
Si 1	Überspannungs-Sicherung		F 61	SVT
Sp 64	Spule (Saugkreis)	80 kHz	97 E 2.57.15	HAGENUK
Sp 65	Spule (Saugkreis)	1522 kHz	97 E 2.57.15	HAGENUK
Sp 66	Spule (Antennenspule)		97 E 2.57.13	HAGENUK
Sp 67	Spule (Kreisspule)	500 kHz	97 E 2.57.13	HAGENUK
Sp 68	Bandfilter	500 kHz	97 E 2.57.16	HAGENUK
Sp 69	Bandfilter	500 kHz	97 E 2.57.16	HAGENUK
Sp 72	Bandfilter	1522 kHz	97 E 2.57.09	HAGENUK
Sp 73	Bandfilter	1522 kHz	97 E 2.57.09	HAGENUK
Sp 74	Bandfilter	80 kHz	97 E 2.57.14	HAGENUK
Sp 75	Bandfilter	80 kHz	97 E 2.57.14	HAGENUK

		1961 Tag We Name	Schaltteilliste zu 97 Sa A 2.57	Liste best. aus Blatt
		Bearb. 8.5. Lammers	Schaltteilliste Nr. 97 Sa 2. 57	Blatt Nr. 14
		Gepr.		
		Norm.		
		HAGENUK KIEL	Universalempfänger UE 12 (Empfänger)	
97/294 F 12.4.65			Ersatz F	
Id.Nr. Spalte Ausgabe Nr. Tag Name				

Kenn-zeich.	Benennung	Elektr. Werte	Zeichnung Nr. Normen Bezeichn.	Firma Type
1	2	3	4	5
Sp 87	Bandfilter	80 kHz	97 E 2.57.18	HAGENUK
Sp 88	Bandfilter	80 kHz	97 E 2.57.18	HAGENUK
Sp 89	Bandfilter	80 kHz	97 E 2.57.18	HAGENUK
Sp 90	Bandfilter	80 kHz	97 E 2.57.20/1	HAGENUK
Sp 91	Bandfilter	80 kHz	97 E 2.57.20/1	HAGENUK
Sp 92	Bandfilter	80 kHz	97 E 2.57.20/1	HAGENUK
Sp 93	Bandfilter	500 kHz	97 - 2.57.17	HAGENUK
Sp 94	Bandfilter	500 kHz	97 - 2.57.17	HAGENUK
Sp 95	Spule (Tonsieb)	1000 Hz	97 F 2.57.106	HAGENUK
Sp 98	Bandfilter	500 kHz	97 E 2.57.19	HAGENUK
Sp 99	Bandfilter	500 kHz	97 E 2.57.19	HAGENUK
Tr 1	Ausgangstrans-formator		97 E 2.57.06	HAGENUK

Id.Nr.	Spalte	Änderung	Tag	Name

	Tag	Name
961		
Bearb.	8.5.	Lammers
Gepr.		
Norm.		

HAGENUK KIEL

Schaltteilliste zu: 97 Sa A 2.57

Liste best. aus: Blatt

Schaltteilliste Nr.: 97 Sa 2. 57

Blatt Nr.: 15

Universalempfänger UE 12 (Empfänger)

Ersatz: F

Kenn-zeich.	Benennung	Elektr. Werte	Zeichnung Nr. Normen Bezeichn.	Firma Type
1	2	3	4	5
W 4	Schichtwiderstand	47 kOhm E12 0,3W	TI N 339.1-12	
W 5	Schichtwiderstand	100 kOhm E12 0,3W	TI N 339.1-12	
W 6	Schichtwiderstand	1 MOhm E12 0,3W	TI N 339.1-12	
W 7	Schichtwiderstand	200 Ohm E24 0,5W	TI N 339.1-12	
W 8	Schichtwiderstand	100 kOhm E12 0,5W	TI N 339.1-12	
W 9	Schichtwiderstand	82 Ohm E12 0,5W	TI N 339.1-12	
W 10	Schichtwiderstand	470 kOhm E12 0,3W	TI N 339.1-12	
W 11	Schichtwiderstand	100 kOhm E12 0,3W	TI N 339.1-12	
W 12	Schichtwiderstand	150 kOhm E12 0,3W	TI N 339.1-12	
W 13	Schichtwiderstand	3,3 kOhm E12 1 W	TI N 339.1-12	
W 14	Schichtwiderstand	1 MOhm E12 0,3W	TI N 339.1-12	
W 15	Schichtwiderstand	100 Ohm E12 0,3W	TI N 339.1-12	
W 16	Schichtwiderstand	47 kOhm E12 0,3W	TI N 339.1-12	
W 17	Schichtwiderstand	15 kOhm E12 2 W	TI N 339.1-12	
W 18	Schichtwiderstand	150 Ohm E12 0,5W	TI N 339.1-12	
W 20	Schichtwiderstand	20 kOhm E24 2 W	TI N 339.1-12	
W 21	Schichtwiderstand	200 kOhm E24 0,3W	TI N 339.1-12	
W 22	Schichtwiderstand	4,7 kOhm E12 0,5W	TI N 339.1-12	
W 23	Schichtwiderstand	100 kOhm E12 0,3W	TI N 339.1-12	
W 24	Schichtwiderstand	1,5 kOhm E12 1 W	TI N 339.1-12	

Id.Nr.	Spalte	Änderung	Tag	Name

	196	Tag	Name
Bearb.		8.5.	Lammers
Gepr.			
Norm.			

HAGENUK KIEL

Schaltteilliste zu
97 Sa A 2.57

Liste best. aus
Blatt

Schaltteilliste Nr.
97 Sa 2. 57

Blatt Nr.
16

Universalempfänger UE 12
(Empfänger)

Ersatz
F

Kenn-zeich.	Benennung	Elektr. Werte	Zeichnung Nr. Normen Bezeichn.	Firma Type
1	2	3	4	5
W 34	Schichtwiderstand	120 Ohm E24 0,3W	TI N 339.1-12	
W 35	Schichtwiderstand	470 kOhm E12 0,3W	TI N 339.1-12	
W 36	Schichtwiderstand	300 Ohm E24 0,5W	TI N 339.1-12	
W 37	Schichtwiderstand	1 MOhm E12 0,3W	TI N 339.1-12	
W 38	Schichtwiderstand	330 kOhm E12 0,3W	TI N 339.1-12	
W 39	Schichtwiderstand	680 kOhm E12 0,3W	TI N 339.1-12	
W 40	Schichtdrehwiderstand	1 kOhm neg. log $R_E \leq 5$ Ohm	97 E 2.57.21-7 Baueinheit m.W 54	HAGENUK
W 41	Drahtwiderstand	15 kOhm 6 W	GWD 6 15 kOhm $\pm$10%	RIG
W 42	Schichtwiderstand	100 kOhm E12 0,5W	TI N 339.1-12	
W 43	Schichtwiderstand	4,7 kOhm E12 0,5W	TI N 339.1-12	
W 44	Schichtwiderstand	100 kOhm E12 0,3W	TI N 339.1-12	
W 45	Schichtwiderstand	47 Ohm E12 0,3W	TI N 339.1-12	
W 46	Schichtwiderstand	200 kOhm E24 0,3W	TI N 339.1-12	
W 47	Schichtwiderstand	47 kOhm E12 0,3W	TI N 339.1-12	
W 48	Schichtwiderstand	100 kOhm E12 0,3W	TI N 339.1-12	
W 50	Schichtwiderstand	470 kOhm E12 0,3W	TI N 339.1-12	
W 51	Schichtwiderstand	1 MOhm E12 0,3W	TI N 339.1-12	
W 52	Schichtwiderstand	1 MOhm E12 0,3W	TI N 339.1-12	
W 53	Schichtwiderstand	1,5 MOhm E12 0,3W	TI N 339.1-12	
W 54	Schichtdrehwiderstand	1 MOhm pos. log	97 E 2.57.21-7 Baueinheit m. W 40	HAGENUK

Id Nr.	Spalte	Änderung	Tag	Name

	196	Tag	We	Name
Bearb.		8.5		Lammers
Gepr.				
Norm.				

HAGENUK KIEL

Schaltteilliste zu
97 Sa A 2.57

Liste best. aus
Blatt

Schaltteilliste Nr.
97 Sa 2. 57

Blatt Nr.
17

Universalempfänger UE 12
(Empfänger)

Ersatz

Kennzeich.	Benennung	Elektr. Werte	Zeichnung Nr. Normen Bezeichn.	Firma Type
1	2	3	4	5
W 55	Schichtwiderstand	47 kOhm E12 0,5W	TI N 339.1-12	
W 56	Schichtwiderstand	100 kOhm E12 0,5W	TI N 339.1-12	
W 57	Schichtwiderstand	1 MOhm E12 0,3W	TI N 339.1-12	
W 58	Schichtwiderstand	330 kOhm E12 0,3W	TI N 339.1-12	
W 59	Schichtwiderstand	4,7 kOhm E12 0,5W	TI N 339.1-12	
W 60	Schichtwiderstand	1,5 kOhm E12 0,5W	TI N 339.1-12	
W 61	Schichtwiderstand	750 Ohm E24 1 W	TI N 339.1-12	
W 62	Schichtwiderstand	330 kOhm E12 0,3W	TI N 339.1-12	
W 63	Drahtwiderstand	5 Ohm 2 W	LDD 2 Kl. 0,5	RIG
W 64	Schichtwiderstand	100 kOhm E12 0,5W	TI N 339.1-12	
W 65	Schichtwiderstand	1 MOhm E12 0,3W	TI N 339.1-12	
W 66	Schichtwiderstand	300 Ohm E24 0,5W	TI N 339.1-12	
W 67	Schichtwiderstand	100 kOhm E12 0,3W	TI N 339.1-12	
W 68	Schichtwiderstand	150 kOhm E12 0,3W	TI N 339.1-12	
W 69	Schichtwiderstand	1,5 kOhm E12 1 W	TI N 339.1-12	
W 70	Schichtwiderstand	4,7 kOhm E12 0,5W	TI N 339.1-12	
W 71	Schichtwiderstand	120 Ohm E12 0,3W	TI N 339.1-12	
W 72	Schichtwiderstand	10 kOhm E12 2 W	TI N 339.1-12	
W 73	Schichtwiderstand	6,2 kOhm E24 2 W	TI N 339.1-12	
W 74	Metalloxyd-Schichtwiderstand	8,2 kOhm 4 W	SXA 4	RIG
W 75	Schichtwiderstand	3,6 kOhm E24 2 W	TI N 339.1-12	
W 76	Drahtwiderstand	5 kOhm 4 W	GWD 4 +5%	RIG
W 77	Drahtwiderstand	6 kOhm 4 W	GWD 4 +5%	RIG

			1961	Tag We	Name
			Bearb.	8.5.	Lammers
			Gepr.		
			Norm.		

F

Id.Nr. | Spalte | Ausgabe Nr. | Tag | Name

Schaltteilliste zu 97 Sa A 2.57

Liste best. aus

Blatt

Schaltteilliste Nr. 97 Sa 2. 57

Blatt Nr. 18

Universalempfänger UE 12 (Empfänger)

Ersatz F

Kenn-zeich.	Benennung	Elektr. Werte	Zeichnung Nr. Normen Bezeichn.	Firma Type
1	2	3	4	5
W 85	Schichtwiderstand	4,7kOhm E12 0,5W	TI N 339.1-12	
W 86	Schichtwiderstand	2,2kOhm E12 0,3W	TI N 339.1-12	
W 87	Schichtwiderstand	4,7kOhm E12 0,3W	TI N 339.1-12	
W 88	Drahtwiderstand	560 Ohm 12 W	ZWS 12 560 Ohm ±5% m.Schraubschelle	RIG
W 89	Drahtwiderstand	910 Ohm 12 W	ZWS 12 910 Ohm ±5% m.Schraubschelle	RIG
W 90	Drahtwiderstand	1100 Ohm 25 W	GWS25 ≈1100 Ohm±5% m.Schraubschelle	RIG
W 91	Drahtwiderstand	1100 Ohm 25 W	GWS25 ≈1100 Ohm±5% m.Schraubschelle	RIG
W 92	Drahtwiderstand	1100 Ohm 25 W	GWS25 ≈1100 Ohm±5% m.Schraubschelle	RIG
W 93	Drahtwiderstand	1100 Ohm 25 W	GWS25 ≈1100 Ohm±5% m.Schraubschelle	RIG
W 94	Drahtwiderstand	100 Ohm 4 W	ZWD 4	RIG

Id.Nr.	Spalte	Änderung	Tag	Name

	1961	Tag	We	Name
Bearb.		8.5.		Lammers
Gepr.				
Norm.				

MAGNUK KIEL

Schaltteilliste zu 97 Sa A 2.57

Liste best. aus Blatt

Schaltteilliste Nr. 97 Sa 2. 57

Blatt Nr. 19

Universalempfänger UE 12 (Empfänger)

Ersatz F

Kenn-zeich.	Benennung	Elektr. Werte	Zeichnung Nr. Normen Bezeichn.	Firma Type
1	2	3	4	5
C 131	Keramikkondensator	25 pF/500 V-	NP 0/IB Rd 3x12 500V- 25pF ±5%	RIG
C 132	Keramikkondensator	100 pF/500 V-	N 33/IB Rd 3x20 500V- 100pF ±2%	RIG
C 133	Keramikkondensator	50 pF/500 V-	N 33/IB Rd 3x14 500V- 50pF ±2%	RIG
C 134	Keramikkondensator	50 pF/500 V-	N 750/IB Rd 3x10 500V- 50pF ±10%	RIG
C 135	Keramikkondensator	100 pF/500 V-	N 33/IB Rd 3x20 500V- 100pF ±2%	RIG
C 136	Papierkondensator	0,1 µF/250 V-	Kc 410/2	ERO
C 137	Papierkondensator	47 nF/250 V-	Kc 347/2	ERO
C 138	Papierkondensator	47 nF/250 V-	Kc 347/2	ERO
C 140	Papierkondensator	47 nF/250 V-	Kc 347/2	ERO
C 141	Keramikkondensator-batterie	200 pF/500 V-	N33/IB 2Stück Rd3x20 500V- 200pF ±2%035/049 I	RIG
C 142	Papierkondensator	47 nF/250 V-	Kc 347/2	ERO
C 143	Lufttrimmer	2,2 - 38 pF	Typ 1202	Schwaiger
C 144	Keramikkondensator-batterie	400 pF/500 V-	N33/IB 3Stück Rd 3x25 500V- 400pF ±2% 035/260III	RIG
C 145	Keramikkondensator-batterie	400 pF/500 V-	N33/IB 3Stück Rd 3x25 500V- 400pF ±2% 035/260III	RIG
C 146	Papierkondensator	0,1 µF/250 V-	Kc 410/2	ERO
C 147	Keramikkondensator	10 pF/500 V-	N 33/IB Rd 3x10 500V- 10pF ±5%	RIG
C 150	Durchführungs-kondensator	10 pF/500 V-	DfK 10pF ±5% 500V- DN 3x16 P 100/IB	Stettner

	1961	Tag	Name	Schaltteilliste zu 97 Sa 2.57.89 d
	Bearb.	8.5.	Lammer	Schaltteilliste Nr. 97 Sa 2. 57
	Gepr.			
	Norm.			

Liste best. aus

Blatt

Blatt Nr. 20

F

Id.Nr. Spalte Ausgabe Nr. Tag Name

HAGENUK KIEL

Universalempfänger UE 12 (2. Oszillator)

Ersatz F

Kenn-zeich.	Benennung	Elektr. Werte	Zeichnung Nr. Normen Bezeichn.	Firma Type
1	2	3	4	5
Dr 2	Drosselspule	15 mH	97 E 2.57.94	HAGENUK
Dr 3	Drosselspule	15 mH	97 E 2.57.94	HAGENUK
Qu 1	Quarz	1602 kHz $10 \cdot 10^{-6}$ C 30 pF	KV 24	Kling-sporn
R 5	Relais	≷14 mA	1200-10200-0,07CuL Nr.532≷14mA2xu Au/Ni	Haller
R 6	Relais	≷14 mA	1200-10200-0,07CuL Nr.532≷14mA2xu Au/Ni	Haller
R 7	Relais	≷12 mA	1800-11300-0,06CuL Nr.532≷12mA2xu Au/Ni	Haller
Rö 3	Röhre		UCH 81	Valvo

Id.Nr.	Spalte	Änderung	Tag	Name

	196	Tag	Name
Bearb.		8.5.	Lammers
Gepr.			
Norm.			

HAGENUK KIEL

Schaltteilliste zu: 97 Sa D 2.57.89 d

Liste best. aus: Blatt

Schaltteilliste Nr.: 97 Sa 2.57

Blatt Nr.: 21

Universalempfänger UE 12 (2. Oszillator)

Ersatz

F

Kenn-zeich.	Benennung	Elektr. Werte	Zeichnung Nr. Normen Bezeichn.	Firma Type
1	2	3	4	5
Sp 78	Bandfilter	1522 kHz	97 E 2.57.90	HAGENUK
Sp 79	Bandfilter	1522 kHz	97 E 2.57.90	HAGENUK
Sp 80	Spule (ZF-Kreis)	1522 kHz	97 E 2.57.93	HAGENUK
Sp 81	Spule (Oszillator)	1602 kHz	97 E 2.57.92	HAGENUK
Sp 82	Bandfilter	80 kHz	97 E 2.57.91	HAGENUK
Sp 83	Bandfilter	80 kHz	97 E 2.57.91	HAGENUK
Sp 84	Bandfilter	80 kHz	97 E 2.57.91	HAGENUK
W 25	Schichtwiderstand	1 MOhm E12 0,3W	TI N 339.1-12	
W 26	Schichtwiderstand	4,7kOhm E12 0,5W	TI N 339.1-12	
W 27	Schichtwiderstand	47 kOhm E12 0,3W	TI N 339.1-12	
W 28	Schichtwiderstand	15 kOhm E12 2 W	TI N 339.1-12	
W 29	Schichtwiderstand	150 Ohm E12 0,5W	TI N 339.1-12	
W 30	Schichtwiderstand	33 kOhm E12 2 W	TI N 339.1-12	
W 32	Schichtwiderstand	4,7kOhm E12 0,5W	TI N 339.1-12	

Id Nr.	Spalte	Änderung	Tag	Name

	Tag	Name
196		
Bearb.	8.5.	Lammers
Gepr.		
Norm.		

HAGENUK KIEL

Schaltteilliste zu
97 Sa D 2.57.89 d

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Schaltteilliste Nr.
97 Sa 2. 57

Blatt Nr.
22

Universalempfänger UE 12
(2. Oszillator)

Ersatz

F

Kenn-zeich.	Benennung	Elektr. Werte	Zeichnung Nr. Normen Bezeichn.	Firma Type
1	2	3	4	5
C 211	Drehkondensator	15 pF	Achsende Form C nach DIN E 41450 Achslg. 44	
C 212	Drehkondensator	15 pF	Baueinheit Typ 215	Hopt
C 213	Trimmer	10 - 45 pF	16 Triko 10/45 D 9(	Stettner
C 214	Papierkondensator	47 nF/250 V-	Kc 347/2	ERO
C 215	Papierkondensator	47 nF/250 V-	Kc 347/2	ERO
C 216	Keramikkondensator-batterie	500 pF/500 V-	N33/IB 4Stück Rd 3x 500pF ±2% 035/260V	25 500V- RIG
C 217	Keramikkondensator-batterie	200 pF/500 V-	N33/IB 2Stück Rd 3x 200pF ±2% 035/258 I	20 500V- RIG
C 218	Papierkondensator	470 pF/1000 V-	Kc 147/10	ERO
C 219	Papierkondensator	10 nF/250 V-	Kc 310/2	ERO
Dr 5	Drosselspule	2,5 mH	97 E 2.57.104	HAGENUK
L 6	Steckerleiste		A 8 DIN 41622	
R 8	Relais	≷10 mA	1737-7900-0,05 CuL Nr.531≷10mA2xu Au/Ni	Haller
R 9	Relais	≷14 mA	840-5800-0,06 CuL Nr.531≷14mA2xu Au/Ni	Haller

			Schaltteilliste zu: 97 Sa E 2.57.35 u. 102 d	Liste best. aus: Blatt
	961	Tag Name		
	Bearb.	8.5. Lammer	Schaltteilliste Nr.: 97 Sa 2. 57	Blatt Nr.: 23
	Gepr.			
	Norm.			
F			Universalempfänger UE 12 (Beat Oszillator)	
Id.Nr. Spalte Ausgabe Nr. Tag Name			Ersatz F	

Kenn-zeich.	Benennung	Elektr. Werte	Zeichnung Nr. Normen Bezeichn.	Firma Type
1	2	3	4	5
Rö 7	Röhre		UCC 85	Valvo
Sp102	Spule (Kreisspule)	80 kHz	97 E 2.57.37	HAGENUK
Sp103	Spule (Kopplungsspule)		97 E 2.57.37	HAGENUK
Sp104	Spule (Kopplungsspule)		97 E 2.57.37	HAGENUK
Sp105	Spule (Kreisspule)		97 E 2.57.37	HAGENUK
S 17	Beat-Schalter	Umschalter 1pol.	101 UN	Marquardt
W 80	Schichtwiderstand	10 kOhm E12 1W	TI N 339.1-12	
W 81	Schichtwiderstand	47 kOhm E12 0,3W	TI N 339.1-12	
W 82	Schichtwiderstand	10 kOhm E12 1W	TI N 339.1-12	
W 83	Schichtwiderstand	2 MOhm E24 0,3W	TI N 339.1-12	
W 84	Schichtwiderstand	100kOhm E12 0,3W	TI N 339.1-12	

Id Nr.	Spalte	Änderung	Tag	Name

1961	Tag	Name
Bearb.	8.5.	Lammers
Gepr.		
Norm.		

HAGENUK KIEL

Schaltteilliste zu
97 Sa E 2.57.35 u. 102 d

Liste best. aus
Blatt

Schaltteilliste Nr.
97 Sa 2. 57

Blatt Nr.
24

Universalempfänger UE 12
(Beat Oszillator)

Ersatz
F

Kenn-zeich.	Benennung	Elektr. Werte	Zeichnung Nr. Normen Bezeichn.	Firma Type
1	2	3	4	5
C 299	Perlkondensator	2 pF/500 V-	N 470/2/0,25 pF Pa 5 Ø 500 V-	RIG
C 300	Drehkondensator	5,5 - 20 pF	97 F 9.494 mit Antrieb 1:1,8 Baueinheit mit C313	Hopt
C 301	Keramischer-Rohrtrimmer	0,5 - 3 pF	82081/2 E 5	Valvo
C 302	Keramikkondensator-batterie	89 pF/500 V-	N75/IA 2Stück Rd3x 89pF ±1%035/201 I	14 500V- RIG
C 303	Keramikkondensator	50 pF/500 V-	N 150/IB Rd 3x14 500V- 50pF ±10%	RIG
C 304	Keramikkondensator-batterie	498 pF/500 V-	N150/IA 4Stück Rd3x 498pF ±1%035/207 V	25 500V- RIG
C 305	Keramikkondensator-batterie	498 pF/500 V-	N150/IA 4Stück Rd3x 498pF ±1%035/207 V	25 500V- RIG
C 306	Keramikkondensator	50 pF/500 V-	N150/IB Rd 3x14 500V- 50pF ±10%	RIG
C 307	Keramikkondensator	50 pF/500 V-	N150/IB Rd 3x14 500V- 50pF ±10%	RIG
C 308	Papierkondensator	22 nF/250 V-	Kc 322/2	ERO
C 310	Papierkondensator	1 nF/1000V-	Kc 210/10	ERO
C 311	Papierkondensator	0,1 uF/250V-	Kc 410/2	ERO
C 312	Durchführungs-kondensator	6,8 nF/500 V-	R 4000 DGd 3x20 500V- 6800 pF ±20%	RIG
C 313	Drehkondensator	6,5 - 31,5 pF	mit Antrieb 1:1,8 Baueinheit mit C300	Hopt
C 314	Trimmer	10 - 45 pF	12 Triko 10/45 D90	Stettner
C 315	Keramikkondensator	15 pF/500 V-	NP 0/IB Rd 3x10 500V- 15pF ±5%	RIG
C 316	Papierkondensator	22 nF/250 V-	Kc 322/2	ERO
C 317	Papierkondensator	47 nF/250 V-	Kc 347/2	ERO
C 318	Kunststoff-Rohrtrimmer	3 - 60 pF	Kunststoff-Rohrtr. C 3/60 500V-	Valvo

		1961 Tag We Name	Schaltteilliste zu 97 Sa E 2.57.112 d	Liste best. aus Blatt
		Bearb. 8.5 Lammer	Schaltteilliste Nr. 97 Sa 2. 57	Blatt Nr. 25
		Gepr.		
		Norm.		
F			Universalempfänger UE 12 (Frequenzlupe)	
97/39 19.6.62 Neu			Ersatz F	
97/961 17.10.61 Neu				
Id.Nr. Spalte Aausgabe Nr. Tag Name				

Kenn-zeich.	Benennung	Elektr. Werte	Zeichnung Nr. Normen Bezeichn.	Firma Type
1	2	3	4	5
C 321	Keramikkondensator	30 pF/500 V-	NP 0/IB Rd 3x12 500V- 30pF +5%	RIG
C 322	Perlkondensator	1 pF/500 V-	P 33 Pa 5Ø 500V- 1 pF +0,25pF	RIG
C 323	Keramikkondensator-batterie	350 pF/500 V-	N150/IB 2Stück Rd3x30 500V- 350pF ±2%035/050 I	RIG
C 324	Papierkondensator	47 nF/250 V-	Kc 347/2	ERO
C 325	Kunststoff-Rohrtrimmer	3 - 60 pF	Kunststoff-Rohrtr. C 3/60 500 V-	Valvo
C 326	Kunststoff-Rohrtrimmer	3 - 60 pF	Kunststoff-Rohrtr. C 3/60 500 V-	Valvo
C 327	Kunststoff-Rohrtrimmer	3 - 60 pF	Kunststoff-Rohrtr. C 3/60 500 V-	Valvo
C 328	Kunststoff-Rohrtrimmer	3 - 60 pF	Kunststoff-Rohrtr. C 3/60 500 V-	Valvo
C 329	Kunststoff-Rohrtrimmer	3 - 60 pF	Kunststoff-Rohrtr. C 3/60 500 V-	Valvo
Qu 3	Quarz 100 kHz $10 \cdot 10^{-6}$	Bürdekapazität 70 pF	KV 24 G	Klingsporn
Qu 4			KV 14	Klingsporn
Qu 5			KV 14	Klingsporn
Qu 6			KV 14	Klingsporn
Qu 7			KV 14	Klingsporn
Qu 8			KV 14	Klingsporn

Id.Nr.	Spalte	Änderung	Tag	Name

961 | Tag | We | Name
Bearb. | 8.5. | Lammers
Gepr.
Norm.

HAGENUK KIEL

Schaltteilliste zu 97 Sa E 2.57.112 d

Liste best. aus Blatt

Schaltteilliste Nr. 97 Sa 2. 57

Blatt Nr. 26

Universalempfänger UE 12 (Frequenzlupe)

Ersatz F

Kenn-zeich.	Benennung	Elektr. Werte	Zeichnung Nr. Normen Bezeichn.	Firma Type
1	2	3	4	5
Rö 8	Röhre		UCC 85	Valvo
Rö 9	Röhre		UF 85	Valvo
Rö 10	Röhre		UF 85	Valvo
S 20/ 1-4	Wahlschalter	Kleinstufenschalter Typ 1600 jedoch 8 Schaltstellg.	Nr. 4601 E-23-12 linker Anschlag Nr. 10	Winkler
Sp120	Spule		97 E 2.57.120	HAGENUK
W 120	Schichtwiderstand	470kOhm E12 0,3W	TI N 339.1-12	
W 121	Schichtwiderstand	470 Ohm E12 0,5W	TI N 339.1-12	
W 122	Schichtwiderstand	470kOhm E12 0,3W	TI N 339.1-12	
W 123	Schichtwiderstand	4,7kOhm E12 0,5W	TI N 339.1-12	
W 124	Schichtwiderstand	20 kOhm E24 1 W	TI N 339.1-12	
W 125	Schichtwiderstand	20 kOhm E24 1 W	TI N 339.1-12	
W 126	Schichtwiderstand	100kOhm E12 0,3W	TI N 339.1-12	
W 127	Schichtwiderstand	4,7kOhm E12 0,5W	TI N 339.1-12	
W 128	Schichtwiderstand	82 kOhm E12 0,5W	TI N 339.1-12	

Id.Nr. | Spalte | Änderung | Tag | Name

1961 Tag We Name
Bearb. 8.5. Lammers
Gepr.
Norm.

HAGENUK KIEL

Schaltteilliste zu 97 Sa E.2.57.112 d

Liste best. aus Blatt

Schaltteilliste Nr. 97 Sa 2. 57

Blatt Nr. 27

Universalempfänger UE 12 (Frequenzlupe)

Ersatz

IF

Kenn-zeich.	Benennung	Elektr. Werte	Zeichnung Nr. Normen Bezeichn.	Firma Type
1	2	3	4	5
W 131	Schichtwiderstand	20 kOhm E24 1 W	TI N 339.1-12	
W 132	Schichtwiderstand	2 kOhm E24 0,3W	TI N 339.1-12	
W 133	Schichtwiderstand	1 MOhm E12 0,3	TI N 339.1-12	
W 134	Schichtwiderstand	100 kOhm E12 0,5W	TI N 339.1-12	
W 135	Schichtwiderstand	100 kOhm E12 0,5	TI N 339.1-12	
W 136	Schichtwiderstand	4,7 kOhm E12 0,5W	TI N 339.1-12	

	196 Tag Name	Schaltteilliste zu 97 Sa 2.57.112 d		Liste best. aus Blatt
	Bearb. 8.5. Lammers	Schaltteilliste Nr. 97 Sa 2. 57		Blatt Nr. 28
	Gepr.	Universalempfänger UE 12 (Frequenzlupe)		
	Norm.			
F	HAGENUK KIEL	Ersatz F		
W133 97/216 21.7.64 H.				
Id.Nr. Spalte Ausgabe Nr. Tag Name				

Kenn-zeich.	Benennung	Elektr. Werte	Zeichnung Nr. Normen Bezeichn.	Firma Type
1	2	3	4	5
L 11	Terminal of loop system		8 N 116.541.141	HAGENUK
L 12	Terminal of loop system		8 N 116.541.141	HAGENUK
L 13	Terminal of loop system		8 N 116.541.141	HAGENUK
Si 4	Fuse	1,0 A/250 V 1,6 A/250 V	DIN 41571	
Tr 2	Mains transformer		97 E 9.214.02	

Id. Nr.	Spalte	Änderung	Tag	Name

	Tag	Name
1959		
Bearb.	27.1.	Roh.
Gepr.		
Norm.		

HAGENUK KIEL

Schaltteilliste zu: 97 Sa D 10.4.01 Bl.1b

Liste best. aus: 1 Blatt

Schaltteilliste Nr.: 97 Sa 10.4.01 Bl.1b engl.

Blatt Nr.: 1

CABINET UE 12
for A.C. - operation

Ersatz

Kennzeich.	Benennung	Elektr. Werte	Zeichnung Nr. Normen Bezeichn.	Firma Type
1	2	3	4	5
C 230	Berührungsschutz-Kondensator	25 nF/500 V	nach VDE 0560 Ausf. 2 b	ERO
C 231	Berührungsschutz-Kondensator	25 nF/500 V	nach VDE 0560 Ausf. 2 b	ERO
C 232	Berührungsschutz-Kondensator	25 nF/500 V	nach VDE 0560 Ausf. 2 b	ERO
C 233	Berührungsschutz-Kondensator	25 nF/500 V	nach VDE 0560 Ausf. 2 b	ERO
C 234	Papierkondensator	0,1 /uF/630 V =	Kc 410/6	ERO
C 237	Becherblock	0,25 /uF/1000 V =	Da 425/10 EM	ERO
L 11	Federleiste		8 N 116.541.141	HAGENUK
L 12	Federleiste		8 N 116.541.141	HAGENUK
L 13	Federleiste		8 N 116.541.141	HAGENUK
Si 4	Sicherung	1,0 A/250 V	DIN 41571	
Sp 110	Drosselspule	1,2 mH	97 E 9.223.05	HAGENUK
Sp 111	Drosselspule	5,75 mH	97 E 9.223.03	HAGENUK
Sp 112	Drosselspule	1,2 mH	97 E 9.223.05	HAGENUK
Sp 113	Drosselspule	5,75 mH	97 E 9.223.03	HAGENUK
U 1	Platte, vollst. (Umschaltleiste)		97 F 9.223.04	HAGENUK

Ld. Nr.	Spalte	Änderung	Tag	Name

	Tag	Name
Bearb.	22.12.58	Thomsen
Gepr.	23.12	
Norm.		

HAGENUK KIEL

Schaltteilliste zu
97 Sa D 10..4. 01 Bl. 2 b

Liste best. aus
1 Blatt

Schaltteilliste Nr.
97 Sa 10. 4. 01 Bl. 2 b

Blatt Nr.
1

Gehäuse UE 12 GW
f. Gleich- u. Wechselstrombetrieb

Ersatz

Kenn-zeich.	Benennung	Elektr. Werte	Zeichnung Nr. Normen Bezeichn.	Firma Type
1	2	3	4	5
C 230	Berührungsschutz-Kondensator	25 nF/500 V	nach VDE 0560 Ausf. 2 b	ERO
C 231	Berührungsschutz-Kondensator	25 nF/500 V	nach VDE 0560 Ausf. 2 b	ERO
C 232	Berührungsschutz-Kondensator	25 nF/500 V	nach VDE 0560 Ausf. 2 b	ERO
C 233	Berührungsschutz-Kondensator	25 nF/500 V	nach VDE 0560 Ausf. 2 b	ERO
C 234	Papierkondensator	0,1 µF/630 V ~	Ke 410/6	ERO
C 237	Becherblock	0,25 µF/1000 V ~	Da 425/10 EM	ERO
L 11	Federleiste		8 N 116.541.141	HAGENUK
L 12	Federleiste		8 N 116.541.141	HAGENUK
L 13	Federleiste		8 N 116.541.141	HAGENUK
Si 4	Sicherung	1,0 A/250 V	DIN 41571	
Sp 110	Drosselspule	1,2 mH	97 E 9.223.05	HAGENUK
Sp 111	Drosselspule	5,75 mH	97 E 9.223.03	HAGENUK
Sp 112	Drosselspule	1,2 mH	97 E 9.223.05	HAGENUK
Sp 113	Drosselspule	5,75 mH	97 E 9.223.03	HAGENUK
Tr 3	Trenntrafo		97 E 9.204. 01	HAGENUK
U 1	Platte, vollst. (Umschaltleiste)		97 F 9.223.04	HAGENUK

Ld. Nr.	Spalte	Änderung	Tag	Name

	Tag	Name
Bearb.	22.12.58	Thomsen
Gepr.	23.12	
Norm.		

HAGENUK KIEL

Schaltteilliste zu
97 Sa, D 10. 4. 01 Bl. 3 b

Liste best. aus
1 Blatt

Schaltteilliste Nr.
97 Sa 10. 4. 01 Bl. 3 b

Blatt Nr.
1

Gehäuse UE 12 GW/T
f. Gleichstrom - u. Trenntrafo-Betrieb

Ersatz

Kenn-zeich.	Benennung	Elektr. Werte	Zeichnung Nr. Normen Bezeichn.	Firma Type
1	2	3	4	5
C 238	Papierkondensator	47 nF/630 V-	Kc 347/6	ERO
C 239	Elektrolytkondensator	100 µf/250/275 V-	B 43691-A 2107-T	Siemens
Gr 21	Siliziumdiode	OY 5067		Intermetall
L 11	Federleiste		8 N 116.541.141	HAGENUK
L 12	Federleiste		8 N 116.541.141	HAGENUK
L 13	Federleiste		8 N 116.541.141	HAGENUK
Si 1	Sicherung	1,0 A/250 V 1,6 A/250 V	DIN 41571	
Tr 2	Netztrafo		97 E 9.214.02	HAGENUK

lfd.Nr.	Spalte	Änderung	Tag	Name

	Tag	Name
Bearb.	2.10.62	Grimm
Gepr.		
Norm.		

HAGENUK KIEL

Schaltteilliste zu
97 Sa D 10. 4. 01 Bl.4a

Liste best. aus
1 Blatt

Schaltteilliste Nr.
Gehäuse UE 12 W/TSW
für Wechselstrombetrieb

Blatt Nr.
1

97 Sa 10. 4. 01 Bl.4a

Ersatz

FIXED RESISTORS

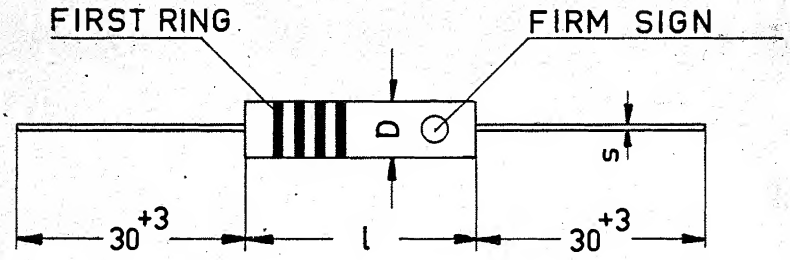
AXIAL WIRE-ENDED LAYER RESISTORS

RATED LOAD 0,1W; 0,25W; 0,3W; 0,5W; 1W; 2W

INTERNATIONAL FUNDAMENTAL VALUES

N 339.1-12

MEASURES IN MM



WELDABLE AND ABLE TO SOLDER (COPPER WIRE)

1)

DESIGNATION OF AN AXIAL WIRE-ENDED LAYER RESISTOR OF 560 TOLERANCE ±10%, 0,5 WATT
IF TROPICAL PROOF, THEN 2)

1) LAYER RESISTOR 560Ω E 12 0,5W N 339.1-12

2) LAYER RESISTOR 560Ω E 12 0,5W TI N 339.1-12

SERIES	TOLERANCE 3)	INTERNATIONAL FUNDAMENTAL VALUES
E 6	± 20%	1,0 — — — 1,5 — — 2,2 — — 3,3 — — 4,7 — — 6,8 — —
E 12	± 10%	1,0 — 1,2 — 1,5 — 1,8 — 2,2 — 2,7 — 3,3 — 3,9 — 4,7 — 5,6 — 6,8 — 8,2 —
E 24	± 5%	1,0 1,1 1,2 1,3 1,5 1,6 1,8 2,0 2,2 2,4 2,7 3,0 3,3 3,6 3,9 4,3 4,7 5,1 5,6 6,2 6,8 7,5 8,2 9,1

3) SMALLER TOLERANCES ON REQUEST ONLY

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engl.

INTERNATIONAL COLOUR CODE				
COLOUR	1ST RING ≙1ST FIGURE	2ND RING ≙2ND FIGURE	3RD RING ≙MULTIPLICATOR	4TH RING ≙TOLERANCE
SILVER	—	—	10^{-2}	±10%
GOLD	—	—	10^{-1}	± 5%
BLACK	—	0	1	—
BROWN	1	1	10	± 1%
RED	2	2	10^{2}	± 2%
ORANGE	3	3	10^{3}	
YELLOW	4	4	10^{4}	
GREEN	5	5	10^{5}	
BLUE	6	6	10^{6}	
VIOLET	7	7	10^{7}	
GREY	8	8	10^{8}	
WHITE	9	9	10^{9}	
NO COLOUR	—	—	—	±20%

THE TECHNICAL ATTRIBUTES OF THE RESISTORS ARE ADJUSTED TO DIN 41400. IF ATTRIBUTES CORRESPONDING TO JAN- OR MIL-R-11 ARE REQUESTED, THIS MUST BE ESPECIALLY SPECIFIED ON THE ORDER.

ENCLOSURE TO THE WORKS STANDARD N 339.1-12

ROSENTHAL

	RATED LOAD IN WATTS	MEASURES NORMAL TYPE D	L	s	PERFORM.WITH TI - COVER. D	L	s	VALUES OF RESISTANCE	TYPE
E 24 ≦ ±5%	0,25	2,5	10,3	0,8	3,5	11,3	0,8	10 OHMS- 1 MOHM	SCD 0,25
	0,5	4,5	10,5	0,8	5,5	11,5	0,8	10 OHMS- 2 MOHM	SCD 0,5
	1	6,5	16,5	0,8	7,5	17,5	0,8	10 OHMS- 3 MOHM	SCD 1
	2	8,5	31	1,0	9,5	32	1,0	10 OHMS-10 MOHM	SCD 2
E 12 ≦ ±10%	0,25	2,5	10,3	0,8	3,5	11,3	0,8	10 OHMS- 3 MOHM	SCD 0,25
	0,5	4,5	10,5	0,8	5,5	11,5	0,8	10 OHMS- 5 MOHM	SCD 0,5
	1	6,5	16,5	0,8	7,5	17,5	0,8	10 OHMS- 5 MOHM	SCD 1
	2	8,5	31	1,0	9,5	32	1,0	10 OHMS-10 MOHM	SCD 2

RESISTA

	RATED LOAD IN WATTS	MEASURES D	L	s	VALUES OF RESISTANCE	TYPE
E 24 ≦ ±5%	0,3	4,5	10	0,8	10 OHMS- 1 MOHM	Rsx 3 033-0300
	0,3	5,3	16,5	0,8	1 MOHM- 5 MOHM	Rsx 4 034-0300
	0,5	6,2	20	0,8	10 OHMS- 2 MOHM	Rsx 5 033-0500
	1	8,2	30	1,0	10 OHMS- 5 MOHM	Rsx 6 033-1100
E 12 ≦ ±10%	0,3	2,9	10	0,7	10 OHMS- 2 MOHM	Rsx 2 031-0300
	0,5	4,5	10	0,8	10 OHMS- 5 MOHM	Rsx 3 031-0500
	0,5	5,3	16,5	0,8	5 MOHM-30 MOHM	Rsx 4 032-0500
	1	6,2	20	0,8	10 OHMS- 5 MOHM	Rsx 5 031-1100
	2	8,2	30	1,0	10 OHMS-10 MOHM	Rsx 6 031-1200

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engl.

BEYSCHLAG

	RATED LOAD IN WATTS	MEASURES D	L	s	VALUES OF RESISTANCE	TYPE
E 24 ≦ ±5%	0,33	3,5	11	0,8	10 OHMS-500kOHMS	B 1/3 Bedrittel
	0,5	5,5	13	0,8	10 OHMS-500kOHMS	B 1/2 Behalbwatt
	1	8,5	19	0,8	10 OHMS- 1MOHM	B 1 Bevollwatt
	2	10,5	33	0,8	20 OHMS- 2MOHMS	B 2 Bezweiwatt
E 12 ≦ ±10%	0,1	2	10	0,5	10 OHMS- 10MOHMS	B 1/10 Bezehntel
	0,25	2,5	11	0,7	10 OHMS- 10MOHMS	B 1/4 Beviertel
	0,33	3,5	11	0,8	10 OHMS- 10MOHMS	B 1/3 Bedrittel
	0,5	5,5	13	0,8	10 OHMS- 20MOHMS	B 1/2 Behalbwatt
	1	8,5	19	0,8	10 OHMS- 22MOHMS	B 1 Bevollwatt
	2	10,5	33	0,8	20 OHMS- 50MOHMS	B 2 Bezweiwatt

FOR ORDERING AN AXIAL WIRE-ENDED RESISTORS, TROPICAL PROOF, MARKED IN THE INTERNATIONAL COLOUR CODE, THE FOLLOWING SPECIFICATION MUST BE GIVEN TO ALL FIRMS: AXIAL WIRE-ENDED RESISTOR, 560 OHMS E 12 0,5 WATTS, TROPICAL PROOF, WITH COLOUR CODE.

Instructions for maintenance of accessories of the wireless equipment

HAGENUK
Radio Service

FN-722

2300 Kiel Westring 431
Postfach 500

Telefon: 0431/41231
Telex: 292828 hanuk d

Mappe : 324

Table of Contents

1. Maintenance of the aerial installation

The aerial installation needs a special maintenance since it is permanently exposed to the influences of the weather and to mechanical loads when the vessel is at sea.

Neglected aerials will mostly be the cause, that no Duplex-calls without interferences can be handled and unattended insulators will cause losses in the transmitting power.

New installed aerials must be checked and tightened daily until the new aerial and rigging material has obtained its final length. This is particularly important for the aerial lead-down, since this wire, if not tightened, would touch stays and other metallic structures.

The hoisting and hauling down of aerials shall be made by means of ropes only. Steel-wires are absolutely unfit for this purpose since such wires will effect itself as an aerial and will absorb transmitting energy from the own transmitter. This energy would indeed be conducted to ground at the holding clamp of the wire, but heavy interferences of the reception will be caused by permanently altering earthing conditions due to painted mast clamps and by touching projecting points of the mast. Interferences will also occur if the earthing connections of stays in the close vicinity of aerials have become defective. All stays and other metallic riggings shall in their length be divided by insulators and their lower parts shall safely be connected to ground in order to prevent an antenna effect and an absorbtion. Earthing of stays through their drill locks is not sufficient, since they are exposed to the vibrations of the engine, which will always result in interferences of the reception. The above mentioned ground connections must therefore be checked regularly.

1.1. Break fuses

Aerials aboard vessels shall always be protected against breaking of ropes caused by heavy storms or vibrations. A device must be provided, which prevents the aerial from falling down at a broken holding rope. This device, which is called a break fuse, will be connected between one of the aerial insulators and the holding rope. It consists of a piece of normal aerial litze wire of about

40 centimeters length, the diameter of which has been diminished, that means in this case, weakened by removal of two legs of the twisted litze wire. In parallel to this break fuse a wire loop of the normal aerial wire diameter is mounted. Its purpose is, to hold the aerial if the break fuse should break at a heavy load as provided.

The aerial, the hoisting ropes, the break fuse and other parts of the aerial arrangement are connected together by means of shackles. At the use of shackles care must be taken that the thread bolts of the shackles must be greased before screwing in, otherwise loosening of the bolts after longer use would become difficult. It must also carefully be observed, that under no circumstances insulators, which are totally made from insulating material, become connected to other parts of the aerial by means of shackles, since the close connection between the iron shackle bolt and the eye of the insulator would cause damage. In such cases a piece of rope must be used as inter-connection.

1.2. Insulators

Insulators must be cleaned in regular intervals. It is a well-known bad habit, that the lead-in bushings and insulators will mostly become painted, when the ship's crew is painting super-structures. This fact must be observed carefully by the Radio Officer.

An insulator covered with paint, soot, wet dust or a layer of wet salt is not more an insulator but represents a high ohmic resistor. Such a state will result in alterations of the aerial tuning data and in a decrease of the aerial current. Cleaning of the insulators therefore belongs to the routine works of the Radio Officer.

2. Maintenance of the emergency battery

A careful daily maintenance and checking of the storage battery by the Radio Officer is demanded by the International Regulations. This is a very important requirement, since the good working order of the emergency equipment in the case of distress depends

upon the attendance of the battery, which shall maintain the installation in operation continuously for a period of at least six hours.

The technical data of the normally used batteries are frequently related to a discharging time of 20 hours. In order to relate this value to the required discharging time of six hours, the number of Ampère-hours (Ah) for a 20 hours discharging time must be multiplied with the factor 0.82.

A battery of 180 Ah at 20 hours discharging time will therefore yield $180 \cdot 0.82 = 147.6$ Ah for the required discharging time of six hours.

Batteries will normally be delivered in a filled and charged state. The instructions belonging to the batteries contain hints for the attendance.

Technical Data:

Electrolyte	chemical pure sulphuric acid
Acid density	1.28 Be
Operating voltage	2.0-2.1 volts per cell
Total voltage of 12 cells	24 volts
Voltage when discharged	approx. 1.75 volt per cell or approx. 21 volts totally.

Under charging the voltage of the single cells increases to 2.6-2.7 volts, thus resulting in a total battery voltage of about 31-32 volts; simultaneously extrication of gas will be observed.

The battery voltage solely is no accurate measure for the degree of charging. After having finished the charging the acid density of each cell must be measured by means of the areometer; it shall be 1.28 when fully charged. Simultaneously the acid level of each cell must be checked. It must be about 1 to 1.5 centimeters above the upper edge of the plates. If the level should be below this amount, distille water must be filled up. After this charging of about one hour is recommended in order to mix the electrolyte. For a permanent good working order the storage battery must immediately become charged after each stronger power consumption.

Each charging procedure must carefully be observed, since longer and continuous charging at bigger current intensity will cause an extrication of lead sponge, which will shorten the service life of the battery.

Charged batteries not being used regularly, must be charged again at least one time monthly, but especially discharged batteries may under no circumstances remain unused for a longer time.

A measurement of the total voltage of the battery does not give a real picture of the actual working order. After charging, therefore, also the voltage of each cell must be measured. Different terminal voltages between the single cells will indicate, that at some cells the lead sponge may already have reached the lower edge of the plates thus causing short circuits. In such cases it must be expected, that the same will also happen at other cells in the next future and that the service life of the battery will soon be finished.

2.2. Attendance of the battery.

The battery must always be kept clean. Splashes of acid, which will occur when measuring the density of acid or when filling up distilled water, must immediately be removed, but care must be observed, since the acid will destroy tissues in a very short time. The screw caps of the cells are provided with a hole for the gas extricating in the cells under charging. This hole must always be kept open. All metallic parts of the battery serving for the cells interconnection must carefully be covered with vaseline as a protection against acid fumes. From time to time all terminal connectors of the battery leads must be checked for a good mechanical connection. After a necessary tightening of screw bolts these must be covered with vaseline again.

The battery is mostly housed in a case on the upper bridge and it must be safely secured against rolling and jumping of the vessel in rough sea. The cover of the case shall be secured against unintentional opening to protect the battery from splashes and rain. The case itself must be fastened to the deck and should be provided with a wrapping.

2.3. Special hints

Under no circumstances open light may be used in vicinity of the battery, since the gas extricating under charging is high explosive. In special battery-rooms only explosion-protected lamps must be used and the switches for the electric light must be installed outside the room.

Care must be taken when touching the battery terminals under charging. On any ship one pole of the battery may be connected directly to one pole of the ship's mains. Danger of life can occur when touching a battery terminal and simultaneously a metallic object of the ship's hull.

Filling-up of acid should only be carried out by a service organization. If, however, this procedure should become necessary at sea, the highest degree of care is demanded when producing the acid by mixing chemical pure sulphuric acid with distilled water.

C a u t i o n !

In every case the sulphuric acid must be given to the distilled water in a thin jet! Under no circumstances water may be poured into the acid, since then the acid would splash to all directions.

The ratio of mixture is two parts of water to one part of acid. The accurate acid density must be checked with the areometer. During this work a protective overall must be worn!

When using funnels from plastic, check that they are made from acid-proof material.

Care must also be taken, when operating with metallic tools above the battery. When falling down, such a tool may cause a dangerous shortcircuit and its sparking can cause an explosion!

Finally it still must be said, that the acid density decreases with an increasing temperature of the acid. This point will be important for vessels permanently engaged in tropical waters.

After this the density is approx. 1.27 at 30° Celsius
and " 1.26 at 40° Celsius

3. Maintenance of Converters

Converters must be maintained regularly. As a safety precaution the mains fuses must be removed before checking a converter.

At the weekly cleaning care must be observed, that no oil or grease will get in touch with the collector or the winding. For the interior of the converter a dust brush should be used for cleaning. Openings for the air circulation may not be obstructed by any paper or dust. Unsufficient cooling will cause an excessive warming up, which possibly would destroy the insulation.

3.1. Collectors and Brushes

Collectors must be maintained with special care, since most the radio interferences will be caused by converters, the collectors of which are sparking due to deficient maintenance.

The surface of a collector must always be even and polished, which will solely depend upon the correct contact giving and spring pressure of the brushes.

305 engl.

The brushes are arranged in the brush holders and will be pressed to the collector by a spring with a mechanical pressure of about 150 grams. Easy sliding of the brushes in the holders is a very important fact. The brushes must often be checked for their length and should be replaced in time, in order to avoid any damage of the collectors by the brush holders. New brushes must at first be brought to a suitable pass form. For this the collector must be wrapped up with carborundum paper and the brushes must be grinded on this paper under slow revolutions.

For cleaning of collectors all liquid cleaning means can be used, which are suited and recommended for electric contacts in general. Under no circumstances the surface of collectors may be grinded with emery- or glass cloth or paper, which only would destroy the collector's surface, thus resulting in heavy "firing" and interfering with the radio reception.

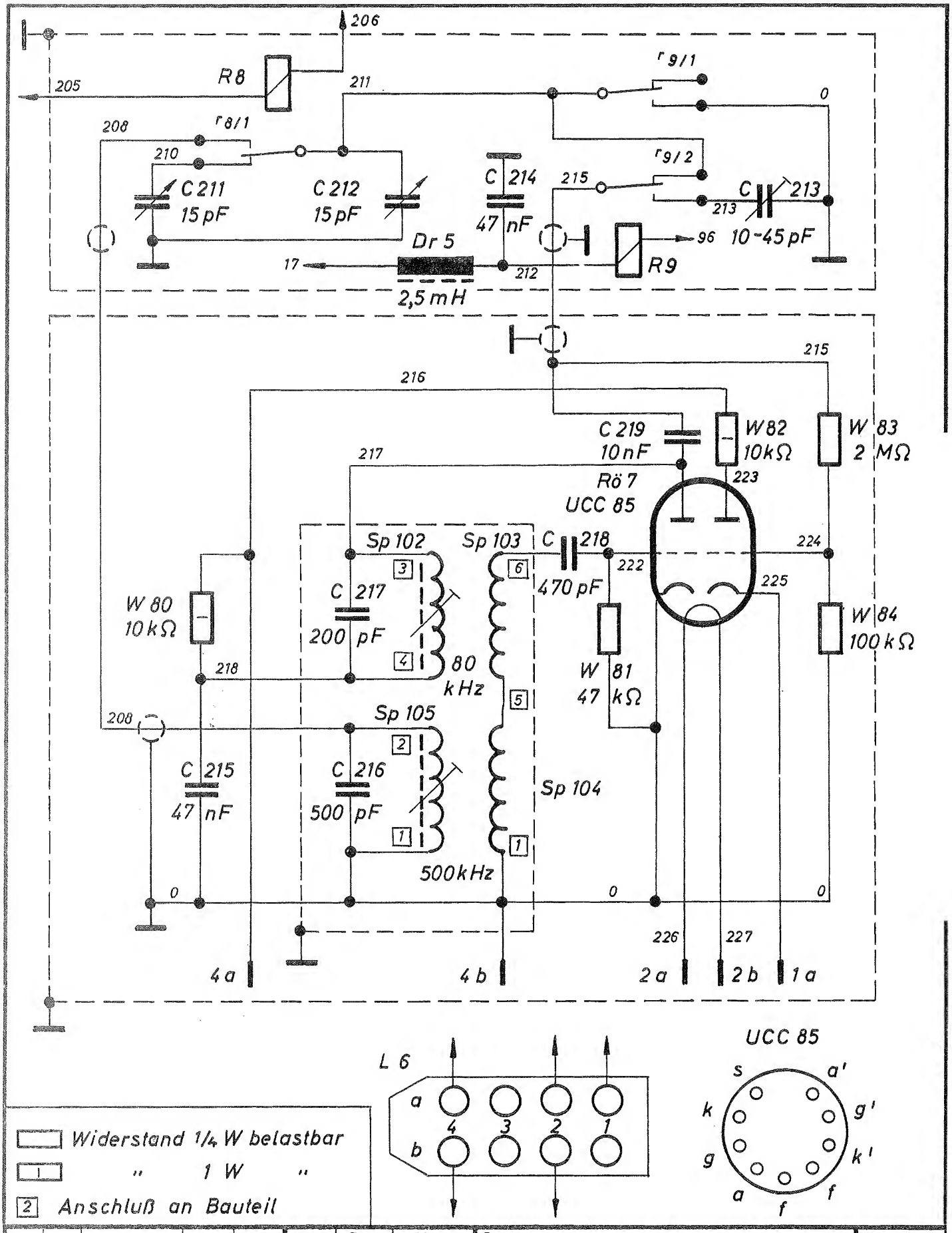
The brush holders are mounted on an adjustable ring, which is fixed by screws to a special position, marked by a white line. The correct position of the ring must also be checked regularly, since alterations in the position outside the neutral zone would effect sparking and burning of the collector bars. Sparking will also be caused by untrue collectors and overloading of the converter, for example by a defective starter. The remedy of such faults should only be done by a service place. At converters with ball-bearings these need not to be maintained in general. Any damage on the bearing, which mostly can be observed by grinding noises and warming-up of the defective bearing, should be repaired by a service organization only.

If, however, such a trouble should occur at sea, it is recommended to consult a ship's engineer for the repair works. This should also be done, when renewing the filling-up of grease, which shall not be made too plentiful, since otherwise the thermal dissipation would be hindered.

Converters, which were damaged by splash water or otherwise or such sets, which had been stored at humid places and not in use for a longer time, must be dried-up carefully before putting into operation. This will say, that converters should be placed on dry rooms on principle.

Converters should not be covered or housed in wooden cases, since this would not permit the necessary free air circulation.

During all repair works care must be taken, that no interference eliminating filters, which eventually should be arranged in the converter's casing, would be damaged or connecting leads would be short-circuited.



Widerstand 1/4 W belastbar

1 " 1 W "

2 Anschluß an Bauteil

Buchstabe	Buchstabe kommt vor	Änderung	Tag	Name

	Tag	Name
Bearb.	8. 5. 61	Lö
Gepr.		
Norm.		

Benennung

Beat Oszillator

(Überlagerer u. Überlagererdreko)

Maßstab

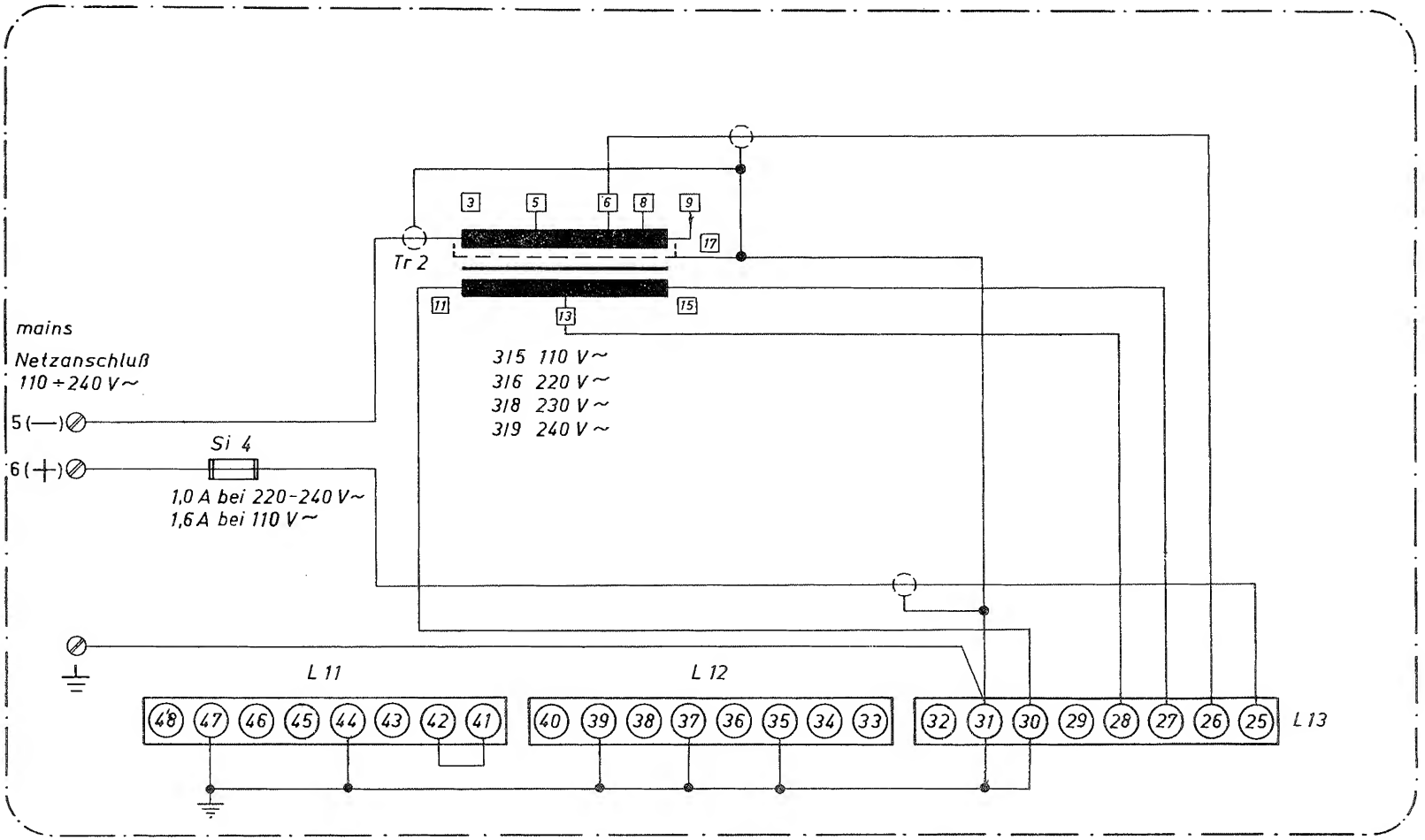
Zeichnung Nr.

97 Sa E 2.57. 35 u.102 d

Ersatz

HAGENUK KIEL

Hugo Hamann, Kiel 2. 57



clamp Klemme		
25-30	Netzspeisung (im Gehäuse verkabelt)	mains supply (contained in the cabinet)
31	Erde	earth
33	Anschluß für Telemikrofon	connection for microtelephone
34-35	Anschluß für Kopfhörer (35 Erde)	connection for headphones (35 earth)
36-37	Anschluß für 2. Lautsprecher 5 Ohm (37 Erde)	connection for 2. speaker 5Ω (37 earth)
38	Sperrspannung	blocking voltage
39	Chassis	
40	Mithörspannung	monitoring voltage
41-46	Konverteranschluß	connection of converter
47	Erde	earth
48	Antenne	aerial

Buchstabe	Buchst. kommt vor	Änderung	Tag	Name
		97/65	5.10.62	
		97/688	13.3.59	
		97/665	13.1.59	
		97/604	3.10.58	
		97/588	4.9.58	

	Freimaßtoleranz	Gewicht
Paßmaß		
ob. Abmaß		
unt. Abmaß		

	Tag	Name
Bearb	8.9.58	Thomsen
Gepr.	7.10	
Norm.		

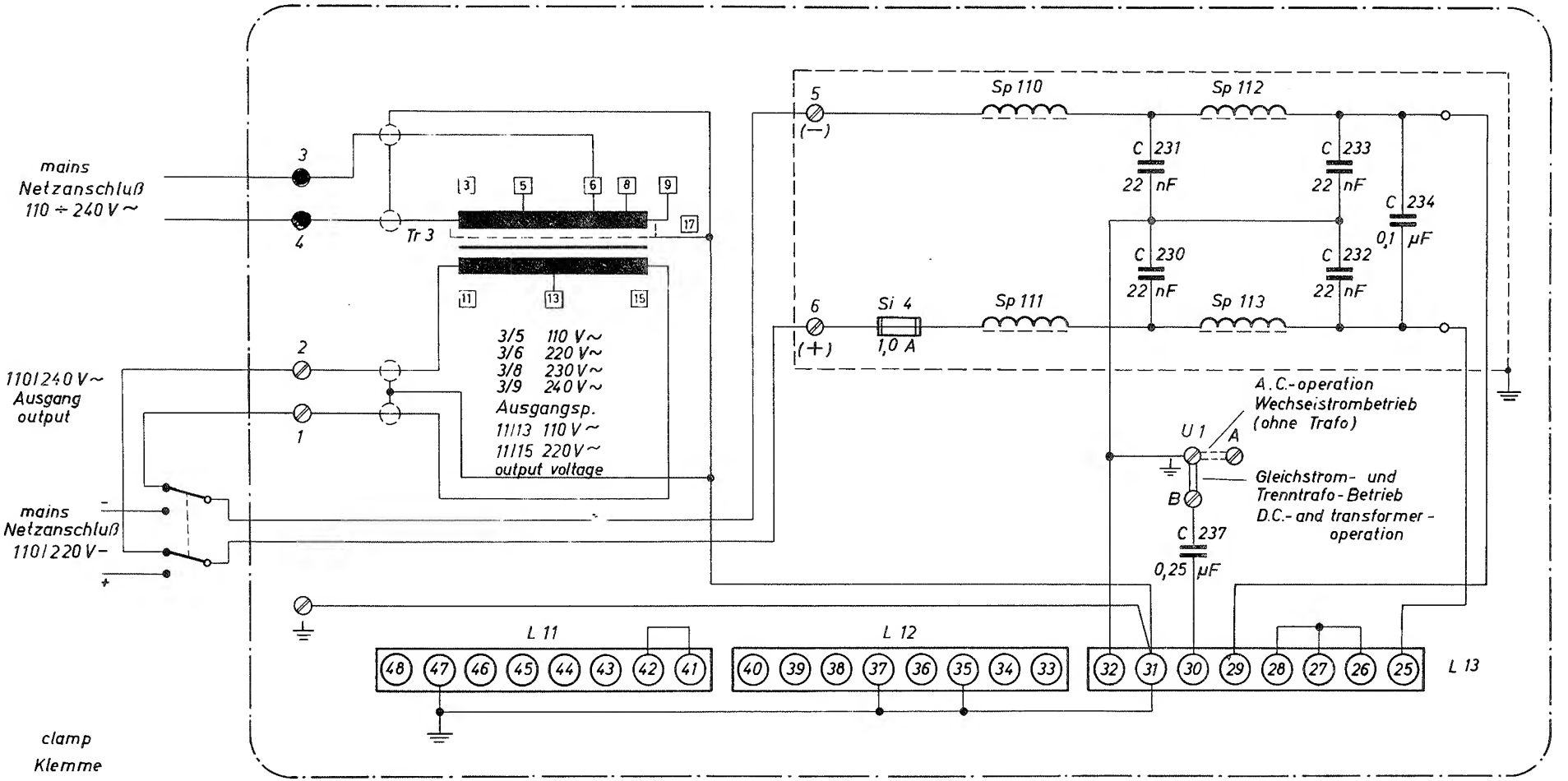
HAGENUK KIEL

cabinet UE 12 u. RE 15 W
for A. C. - operation

Gehäuse UE 12 W u. RE 15 W
für Wechselstrombetrieb

Zeichnung Nr
97 Sa D 10. 4.01 Bl. 1b

Ersatz für Zchng. gl. Nr. v. 27. 3. 58



clamp Klemme		
3 - 4	Netzanschluß 110 - 240 V~ Eingang	mains connection 110 - 240 V~ input
1 - 2	Netzanschluß 110 - 240 V~ Ausgang	" " 110 - 240 V~ output
5 - 6	Netzanschluß zur Netzverdrosselung	" " to mains interference eliminators
31	Erde	earth
32	Getrennter Erdanschluß für Netzverdrosselung	earth connection
33	Anschluß für Telemikrofon	connection for microtelephone
34 - 35	Anschluß für Kopfhörer (35 Erde)	connection for headphones (35 earth)
36 - 37	Anschluß für 2. Lautsprecher 5 Ohm (37 Erde)	connection for 2.speaker 5Ω (37 earth)
38	Sperrspannung	blocking voltage
39	Chassis	chassis
40	Mithörspannung	monitoring voltage
41 - 46	Konverteranschluß	connection of converter
47	Erde	earth
48	Antenne	aerial

25 - 30 Keine Anschlußpunkte für Bordverkabelung
(über diese Klemmen sind innere Geräteverbindungen geführt)
No connection terminals for external wiring system
(these clamps are used for internal connections)

Buchstabe	Buchst kommt vor	Änderung	Tag	Name
		97/65	5 10 62	

	Tag	Name
Bearb.	6.10 58	Thomsen
Gepr.		
Norm		

Freimaßtoleranz | Gewicht

Paßmaß | ob Abmaß | unt. Abmaß

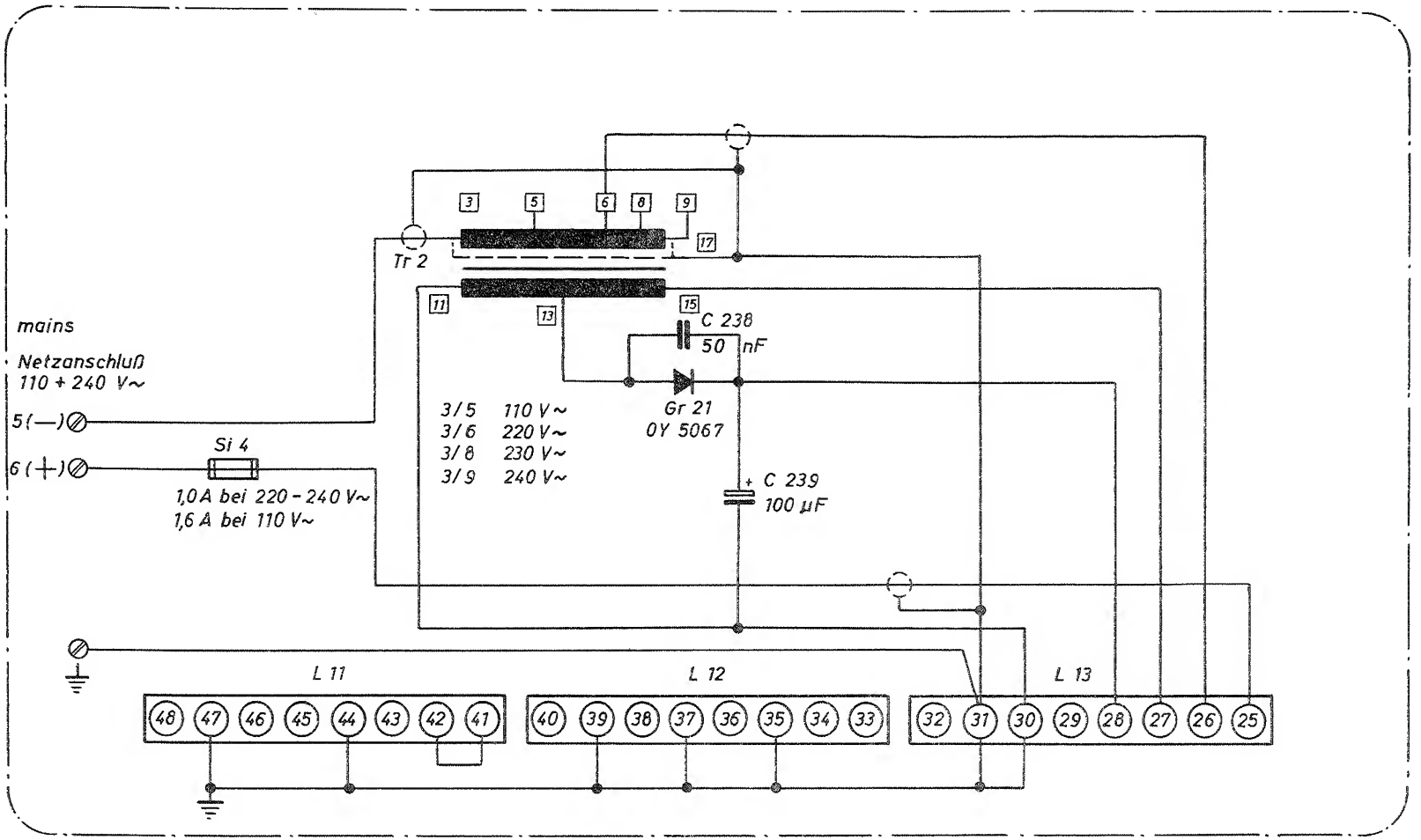
WAGENIK KIEL

cabinet UE 12 GW/T and RE 15 GW/T
for D.C. and transformer operation

Benennung
Gehäuse UE 12 GW/T u. RE 15 GW/T
Für Gleichstrom-und Trenntrafo-Betrieb

Zeichnung Nr
97 Sa D 10.4.01 Bl.3 b

Ersatz



clamp Klemme		
25 - 30	Netzspeisung (im Gehäuse verkabelt)	mains supply (contained in the cabinet)
31	Erde	earth
33	Anschluß für Telemikrofon	connection for microtelephone
34 - 35	Anschluß für Kopfhörer (35 Erde)	connection for headphones(35 earth)
36 - 37	Anschluß für 2. Lautsprecher 5 Ω (37 Erde)	connection for 2. speaker 5Ω(37 earth)
38	Sperrspannung	blocking voltage
39	Chassis	
40	Mithörspannung	monitoring voltage
41-46	Konverteranschluß	connection of converter
47	Erde	earth
48	Antenne	aerial

Buchstabe	Beliebt. kann vor	Änderung	Tag	Name

Maße ohne Toleranzang. nach:

Gewicht

	Tag	Name
1962		
Bearb.	7. 11.	Neu.
Gepr.		
Norm.		

Paßmaß
ob. Abmaß
u. Abmaß

CABINET UE12/RE15(W/TSW)

for A.C. operation

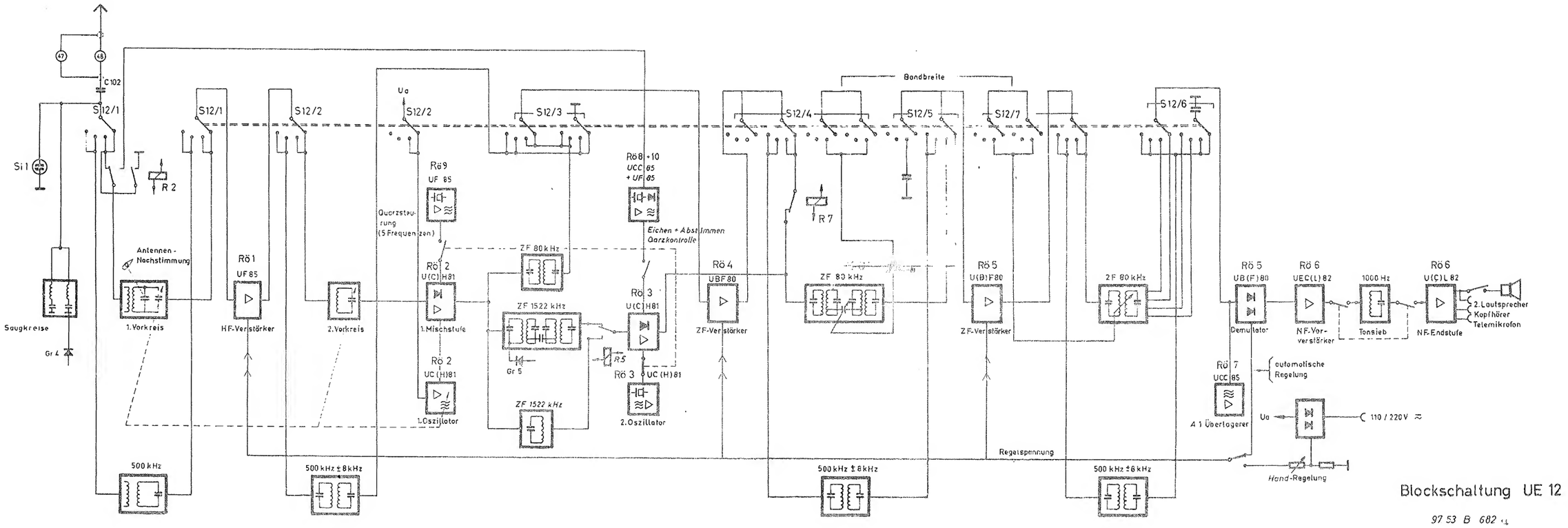
Gehäuse UE12/RE15(W/TSW)

für Wechselstrombetrieb

F

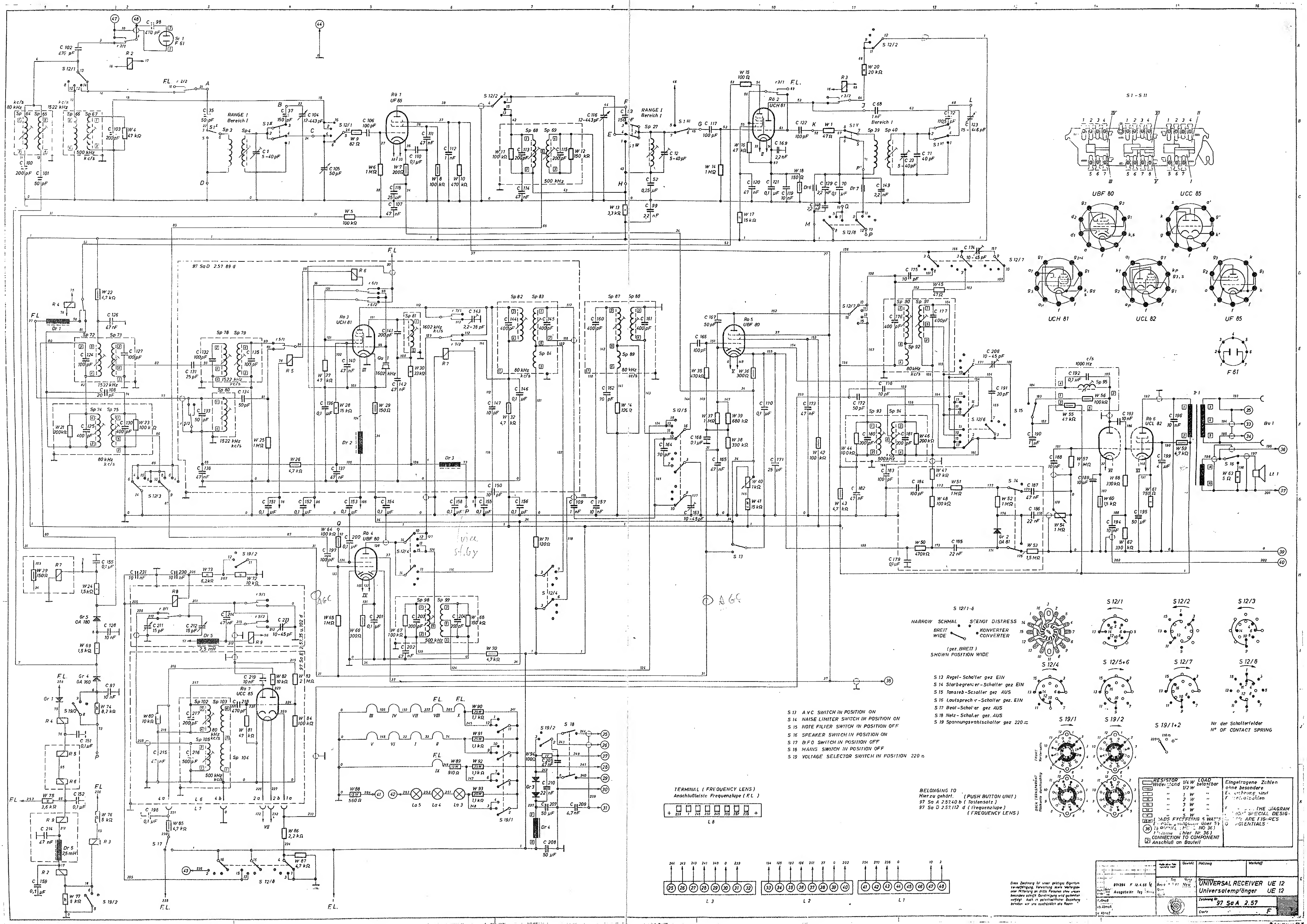
Zeichnung Nr.
97 Sa D 10.4.01 Bl. 4a

Ersatz für gleiche Nr. vom 2.10.62

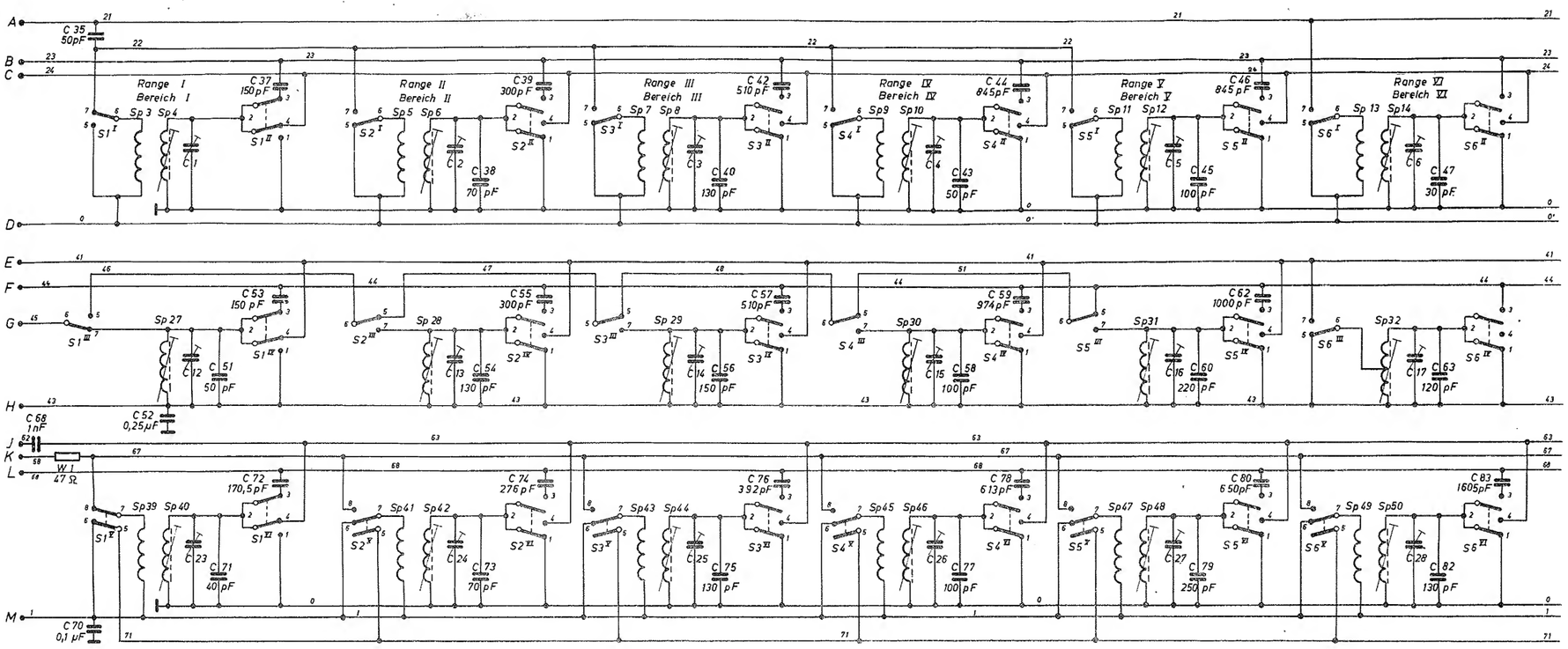


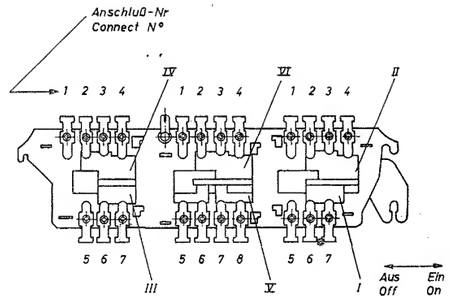
Blockschaltung UE 12

97 53 B 682 ‹4



S 13 A.V.C. SWITCH IN POSITION ON
S 14 NAISE LIMITER SWITCH IN POSITION ON
S 15 NOTE FILTER SWITCH IN POSITION OFF
S 16 SPEAKER SWITCH IN POSITION ON
S 17 B.F.O. SWITCH IN POSITION OFF
S 18 MAINS SWITCH IN POSITION OFF
S 19 VOLTAGE SELECTOR SWITCH IN POSITION 220 ≈
S 13 Regel-Schalter gez EIN
S 14 Störbegrenzer-Schalter gez EIN
S 15 Tonsieb-Schalter gez AUS
S 16 Lautsprecher-Schalter gez. EIN
S 17 Beat-Schalter gez AUS
S 18 Netz-Schalter gez. AUS
S 19 Spannungswahlschalter gez 220 ≈
S 12/1-6
NARROW SCHMAL
SCENOT DISTRESS
BREIT WIDE
KONVERTER CONVERTER
(gez. BREIT)
SHOWN POSITION WIDE
S 12/1
S 12/2
S 12/3
S 12/4
S 12/5+6
S 12/7
S 12/8
S 19/1
S 19/2
S 19/1+2
Nr der Schalterfelder
N° OF CONTACT SPRING
FRONT Vorderseite
BACK TRANSPARENT Rückseite durchsichtig
BELONGING TO
Hierzu gehört (PUSH BUTTON UNIT)
97 Sa A 2.57.40 b (Tastensatz)
97 Sa D 2.57.112 d (Frequenzlupe)
(FREQUENCY LENS)
TERMINAL (FREQUENCY LENS)
Anschlußleiste Frequenzlupe (F.L.)
L 8
L 3
L 2
L 1
RESISTOR Widerstand 1/4 W LOAD belastbar
1/2 W
1 W
2 W
3 W
4 W
5 W
CONNECTION TO COMPONENT
Anschluß an Bauteil
Eingetragene Zahlen ohne besondere
THE DIAGRAM
ARE FIGURES
POTENTIALS
97 Sa D 2.57 89 d
97 Sa E 2.57.35 u. 102 d
UBF 80
UCC 85
UCH 81
UCL 82
UF 85
F 61
S 1 - S 11
UNIVERSAL RECEIVER UE 12
Universalempfänger UE 12
97 Sa A 2.57
F





C 1 bis C 33 Trimmerkondensatoren 5 - 40 pF
C 1 to C 33 trimming condensers 5 - 40 pF

2. R.F. circuit
2. Vorkreis

Oscillator
Oszillator

1. R.F. circuit
1. Vorkreis

Designation of potential

Range	Potentialzahl			
Bereich 11	43		44	
Bereich 10	43		44	
Bereich 9	43		44	
Bereich 8	43		44	
Bereich 7	43		44	
Bereich 6	43		44	
Bereich 5	43			41
Bereich 4	43			41
Bereich 3	43			41
Bereich 2	43			41
Bereich 1	43			41
Anschluß - Nr.	1	2	3	4
Connect N°				

Potentialzahl			
0			63
0			63
0			63
0			63
0			63
0			63
0			63
0			63
0			63
0			63
0			63
1	2	3	4

Potentialzahl			
0		23	24
0		23	24
0		23	24
0		23	24
0		23	24
0		23	24
0			24
0			24
0			24
0			24
0			24
1	2	3	4

Connect N°

Anschluß - Nr.	5	6	7
Bereich 1	46	45	
Bereich 2	47	46	
Bereich 3	48	47	
Bereich 4	51	48	
Bereich 5	44	51	
Bereich 6	43		41
Bereich 7	43		41
Bereich 8	43		41
Bereich 9	43		41
Bereich 10	43		41
Bereich 11	43		41
Range	Potentialzahl		

Potentialzahl			
71	1		67
71	1		67
71	1		67
71	1		67
71	1		67
71	1		67
71	1		67
71	1		67
72	1		67
72	1		67
72	1		67
72	1		67

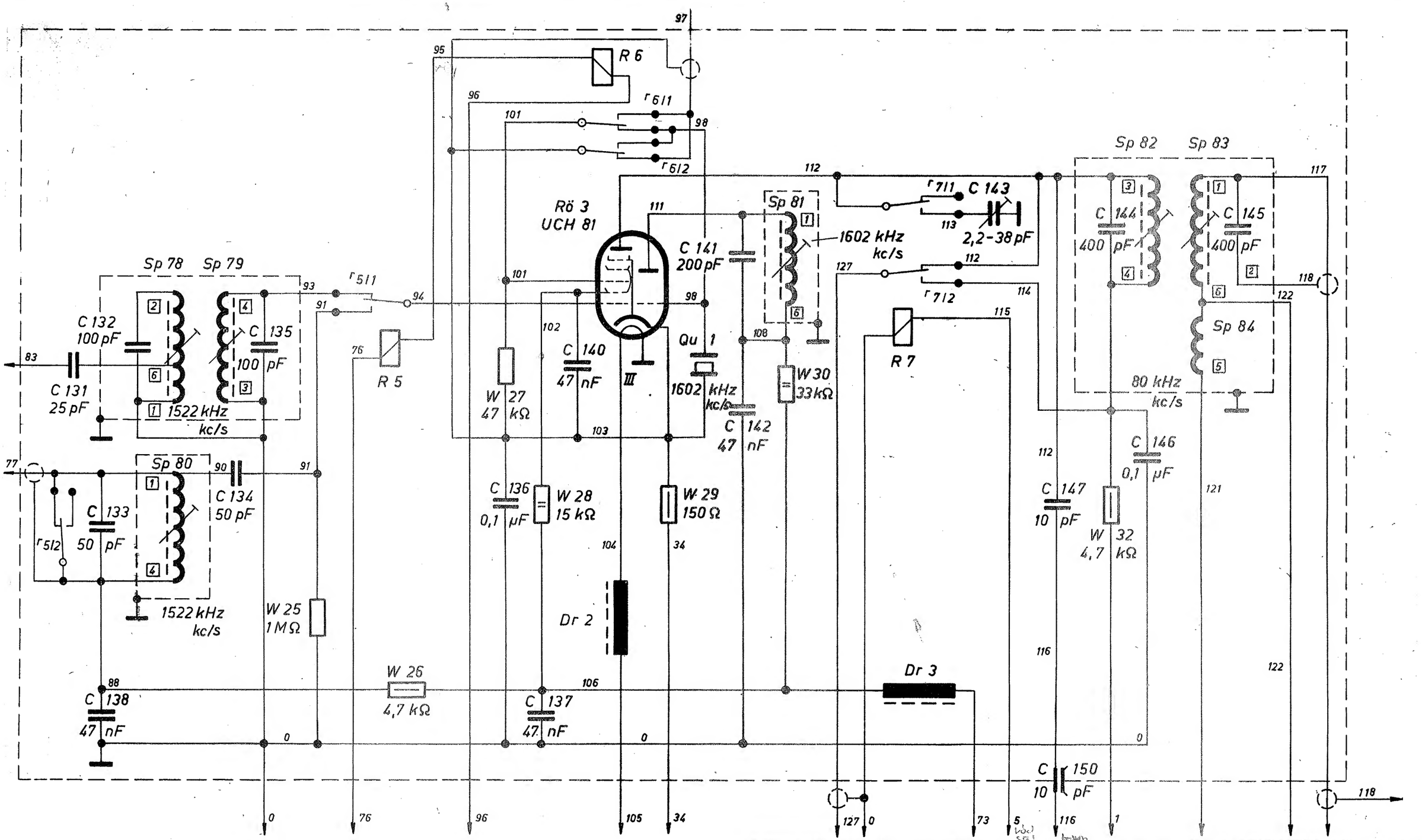
Potentialzahl			
0			22
0			22
0			22
0			22
0			22
0			21
0			21
0			21
0			21
0			21
0			21

Designation of potential

1951	Tag	Name
Bearb	29.11.	Neul.
Gepr.		
Norm		

Tastensatz UE 12
Push button unit UE 12 engl.

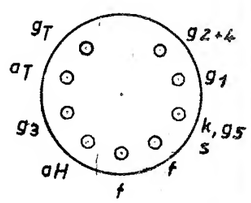
97 Sa B 2.57.40 b



▭	Widerstand 1/4 W belastbar
▬	" 1/2 W "
I	" 1 W "
II	" 2 W "
2	Anschluß an Bauteil

▭	Resistor 1/4 W load
▬	" 1/2 W "
I	" 1 W "
II	" 2 W "
2	connection to component

UCH 81



							Freimaßtoleranz	Gewicht	Halbzeug / Werkstoff
				97/961	17.10.61	Nen			
Buch-stabe	Buchst. kommt vor	Änderung		Tag	Name		Bearb.	Tag 8.5.61	Name Thomsen
							Gepr.		
							Norm.		
Paßmaß									
ob. Abmaß									
unt. Abmaß									

HAGENUK KIEL

Benennung: 2. Oszillator (2. Überlagerer)

Maßstab:

Zeichnung Nr.: 97 Sa D 2.57.89 d

Ersatz:

Sp 120

C 305 498 pF

C 304 498 pF

C 303 50pF

C 302 89 pF

C 300 5,5 - 20pF

C 299 2pF

W 120 470 kΩ

C 301 0,5 - 3pF

Rö 8 UC(C)85

VIII

232

280 281 282 283 0

C 306 50pF

Rö 8 U(C)C 85

VIII

261 285 286 284

C 307 50pF

W 122 470 kΩ

W 121 470 Ω

C 308 22 nF

W 125 20kΩ

C 311 0,1 µF

W 124 20 kΩ

W 123 4,7 kΩ

287 280 312

C 312 6,8 nF

9 77

C 313 6,5 - 31,5 pF

C 314 10-45 pF

Rö 9 UF 85

C 310 1 nF

C 315 15 pF

290 301 302

IX 246

C 316 22 nF

W 131 20 kΩ

W 126 100 kΩ

W 128 82 kΩ

303

C 317 47 nF

W 127 4,7 kΩ

256

18

W 132 2 kΩ

C 322 1pF

306 305

Qu 3 100 kHz kc/s

Rö 10 UF 85

304 261 X 245

C 321 30 pF

C 318 3-60 pF

W 133 470 kΩ

C 323 350 pF

W 134 100 kΩ

W 135 100 kΩ

307

C 324 47 nF

W 136 4,7 kΩ

290 291 292 301

C 325 3-60pF

Qu 4

S 2011

S 2012

C 326 3-60 pF

293 Qu 5 294

C 327 3-60 pF

295 Qu 6 296

C 328 3-60 pF

297 Qu 7 298

C 329 3-60 pF

299 Qu 8 300

235 258

S 2013

S 2014

257

IX VIII X

258 1 246 232 245 256 257 235

UF 85

UCC 85

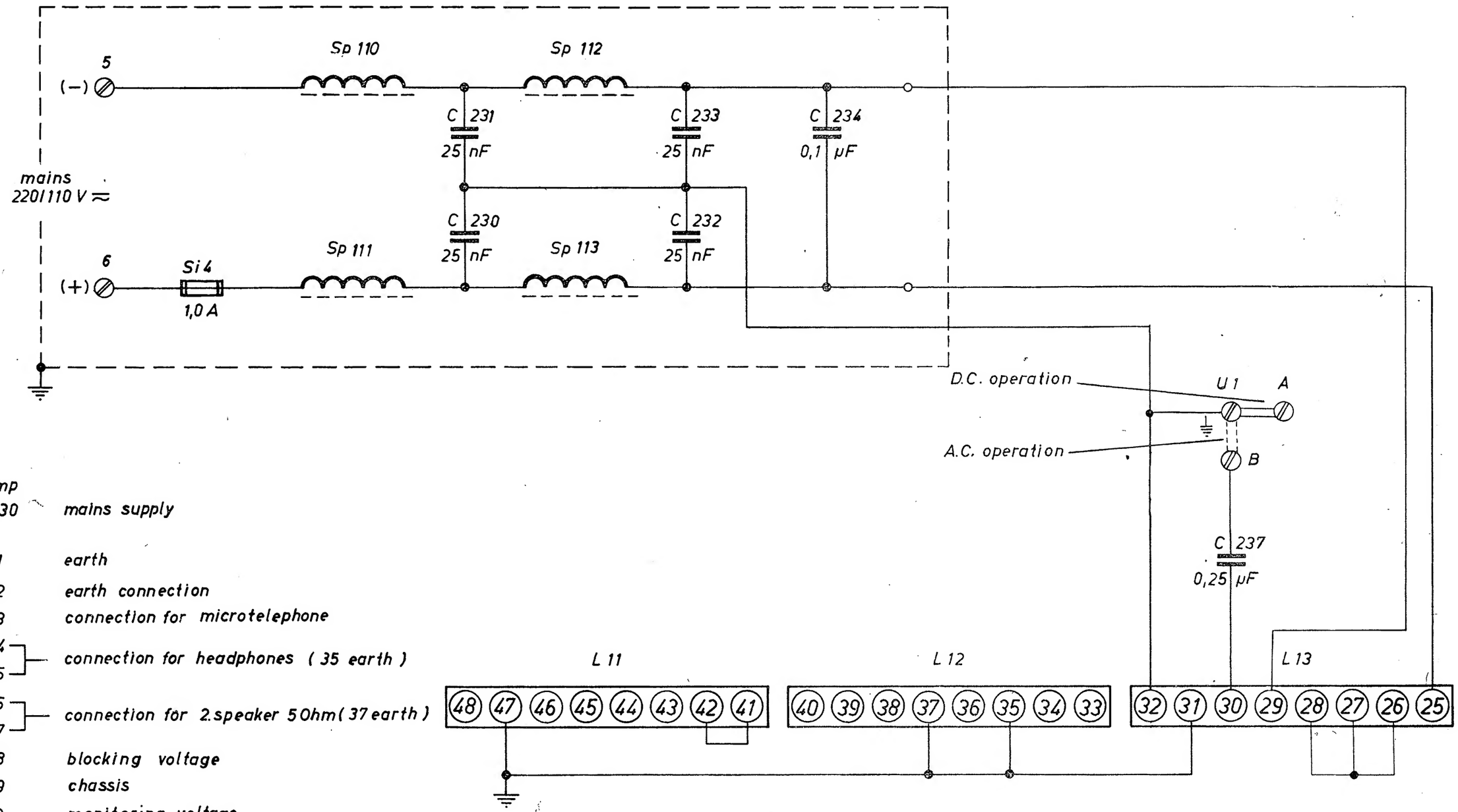
Resistor load

Widerstand 1/4W belastbar

Widerstand 1/2W belastbar

Widerstand 1 W belastbar

		97/39	19.6.61	Dt.		Tag	Name	Benennung: Frequency lens / Frequenzlupe
		97/961	17.10.61	Neu.	Bearb.	8.5.61	Thomsen	
Buchstabe	Buchst. kommt vor	Änderung	Tag	Name	Gepr.			Maßstab
					Norm.			
Paßmaß					HAGENUK KIEL			Zeichnung Nr.: 97 SaD 2.57.112 d
ob. Abmaß								
unt. Abmaß								Ersatz



clamp	
25–30	mains supply
31	earth
32	earth connection
33	connection for microtelephone
34 / 35	connection for headphones (35 earth)
36 / 37	connection for 2.speaker 50hm (37 earth)
38	blocking voltage
39	chassis
40	monitoring voltage
41–46	connection of converter
47	earth
48	aerial

Buch-stabe	Buchst kommt vor	Änderung	Tag	Name

Freimaßtoleranz	Gewicht	Halbzeug	Werkstoff

	Tag	Name
Bearb	21. 1. 58	Lammers
Gepr.		
Norm	12.2.58	

Paßmaß			
ob. Abmaß			
unt. Abmaß			

HAGENUK KIEL

Benennung
CABINET UE 12
for D.C. and A.C. operation

Maßstab

Zeichnung Nr.
97 Sa D 10.4.01 Bl. 2 b

Ersatz

Garantiebestimmungen für die mit unseren Sende- und Empfangsanlagen von uns gelieferten Sende- bzw. Empfängerröhren

. Umfang der Garantieleistung

Die Garantie umfaßt alle mit unseren Sende- und Empfangsanlagen von uns gelieferten Sende- und Empfängerröhren. Die Garantie erstreckt sich nur auf die von uns festgestellten Fabrikationsfehler der Röhren, die sich innerhalb der Garantiefrist, gerechnet vom Tage der Inbetriebnahme, herausstellen. Ausgeschlossen von der Garantie sind durchgebrannte Heizfäden, mechanische Beschädigungen, Fehler, die durch eine von dritter Stelle evtl. in unseren Geräten vorgenommene Änderung entstanden sind und sonstige Mängel, die nicht auf einen Fabrikationsfehler zurückzuführen sind. Werden Röhren, die von uns geliefert wurden, in nicht von uns hergestellten Geräten bzw. nicht in der vorgeschriebenen Art und Weise betrieben, verfällt jeglicher Garantieanspruch.

. Garantieurkunde

Für Empfängerröhren werden Garantiekarten für den ganzen Röhrensatz des betreffenden Empfangsgerätes zur Verfügung gestellt, während für jede Senderöhre eine Einzel-Garantiekarte geliefert wird. Dieses gilt sowohl für die in den gelieferten Geräten befindlichen Betriebs- oder Erstbestückungsröhren, als auch für die gelieferten Reserveröhren und evtl. später nachgelieferten Einzelröhren. Im Interesse einer reibungslosen Garantieabwicklung ist darauf zu achten, daß das Datum der Postabnahme bzw. bei Empfängern das Datum der Inbetriebnahme durch die einbauende Werksvertretung auf der Garantiekarte beurkundet wird. (Dieses gilt für die Garantiekarten der Betriebs- und auch Reserveröhren).

. Garantiefrist

Die Garantiefrist beträgt

a) für Betriebsröhren (Erstbestückungsröhren) 6 Monate ab Postabnahmedatum bzw. bei Empfängern ab Einbaudatum.
b) für Reserveröhren 6 Monate ab Inbetriebnahme laut Funktagebuch, jedoch nicht mehr als 12 Monate nach dem auf der Garantiekarte vermerkten Postabnahmedatum bzw. bei Empfängern Einbaudatum.
c) für nachgelieferte einzelne Röhren 6 Monate ab Verkaufsdatum.

. Garantie-Ersatzabwicklung

Tritt ein Beanstandungsfall innerhalb der Garantiezeit ein, dann wird uns die beanstandete Röhre zusammen mit der in allen Punkten sorgfältig ausgefüllten Garantiekarte zugeleitet. Nach Prüfung der beanstandeten Röhre durch uns wird für den Fall, daß im Rahmen unserer Garantiebestimmungen Ersatz zu leisten ist, eine neue Röhre zur Verfügung gestellt. Die als Ersatz gelieferte Röhre ist keine neu verkaufte Röhre, für die eine neue Garantiefrist in Lauf gesetzt wird. Die Ersatzleistung stellt lediglich eine Erfüllungshandlung der für die zuerst verkaufte Röhre übernommene Garantie pflicht dar, d. h., daß die Garantiefrist für die als Ersatz gelieferte Röhre mit dem Ablauf der Garantiefrist für die zuerst gelieferte Röhre abläuft. Bei Empfängerröhren wird von uns die Kenn-Nummer der als Ersatz gelieferten Röhre in die Garantiekarte neu eingetragen und dafür die Kenn-Nummer der beanstandeten Röhr[illegible] gestrichen. Bei Senderöhren wird eine neue Garantiekarte mit[illegible] liefert

Our guarantee for transmitter and receiver tubes and valves supplied by us with our transmitting and receiving equipment.

A. Extent of Guarantee.
Our guarantee includes all tubes supplied with our transmitter and receiver sets. The guarantee applies only to faults in valve manufacture established by us, which are determined during the period of validity of the guarantee (starting from the date when taken into operation). Burnt out filaments, mechanical damage, faults caused by a third party, probably through alterations carried out on our equipment or any other defects which cannot be traced to faulty manufacture are excluded from the guarantee. This guarantee does not cover claims in respect of tubes supplied by us and used in equipment which is not of our manufacture or not handled and operated according to our instructions.

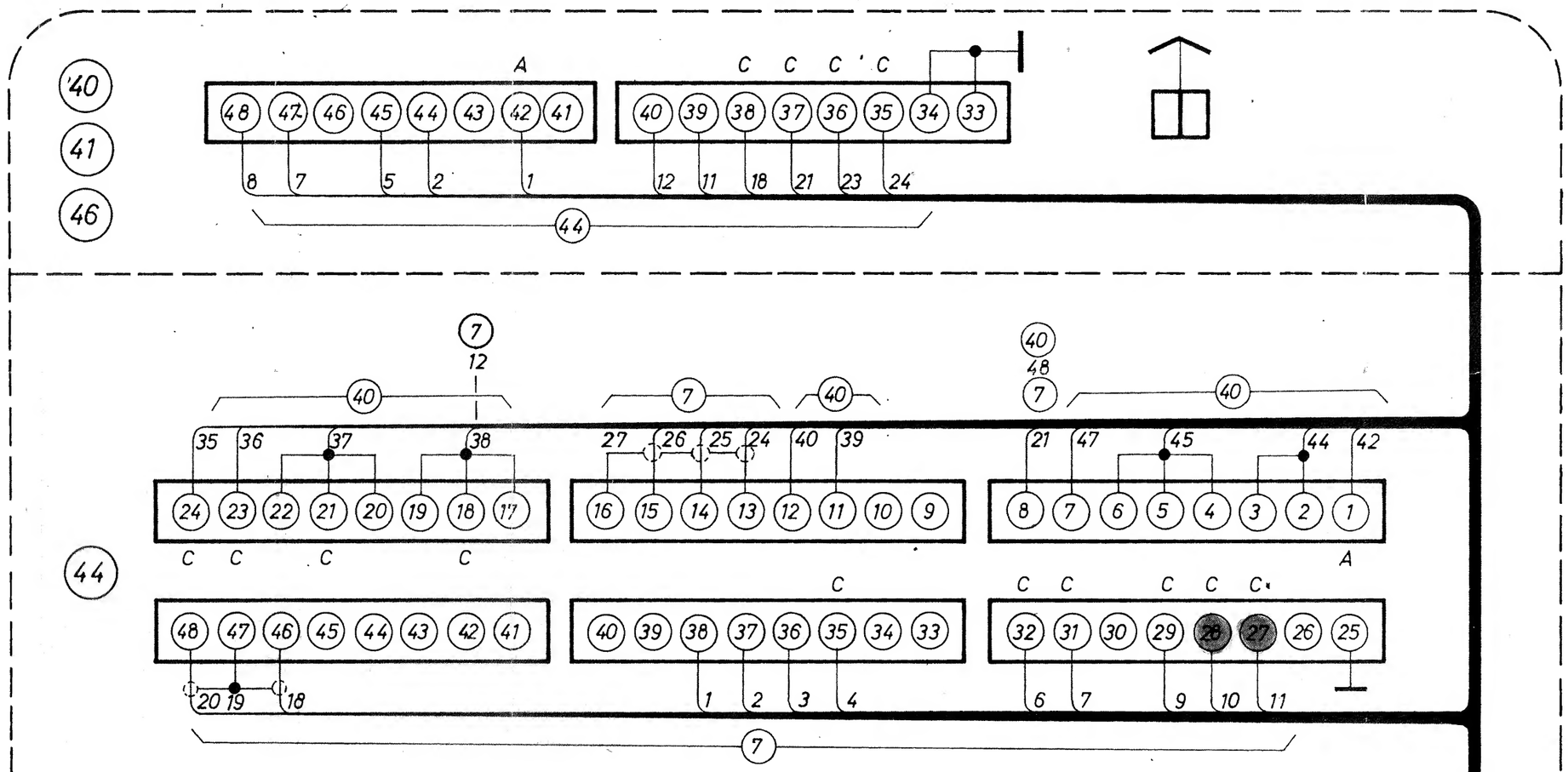
B. Guarantee Certificate.
We supply guarantee cards for the whole valve set of the respective receiver unit but, in the case of transmitter tubes a separate guarantee certificate for each tube is issued. This applies to the tubes originally supplied, also to single tubes supplied subsequently. To ensure accurate execution of the provisions of the guarantee, do not neglect to make sure that the date of assignment of the licence for the radio station or, in the case of receivers, the date when taken into operation, is certified on the guarantee card by the agent carrying out the installation. (This applies to guarantee cards of tubes in actual use and spare tubes).

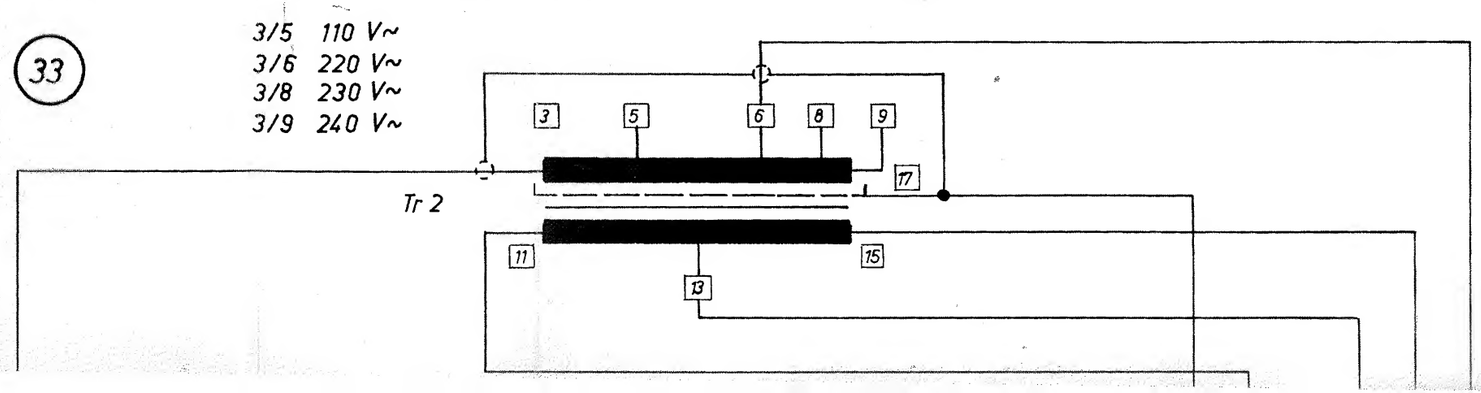
C. Duration of Guarantee.
Our guarantee expires
a) for tubes supplied with equipment six months after the date of assignment of the licence for the radio station or for receiving sets after date, taken into operation;

b) for spare tubes six months after the date taken into operation according to wireless operator's log book, but not longer than twelve months from the date of assignment of the licence for the radio station, or assembling date in the case of receivers;

c) for single tubes supplied subsequently, six months from date of sale.

Guarantee Service.
If a claim is made during the period of validity of our guarantee. the respective tube should be forwarded to us with the guarantee card properly completed in every detail. After testing, the returned tube will be replaced provided that a replacement is covered by the provisions of our guarantee. This new tube, however, does not represent a new sale, requiring a new period of guarantee and will only take the place of the returned tube, which means that the guarantee for the replacement will only be valid for the period stipulated in respect of the original tube. In case of receiver tubes, we will enter the designation-No. of the replacement tube on the guarantee card and delete the Number of the returned tube. In case of transmitter tubes, a new guarantee certificate will be issued.





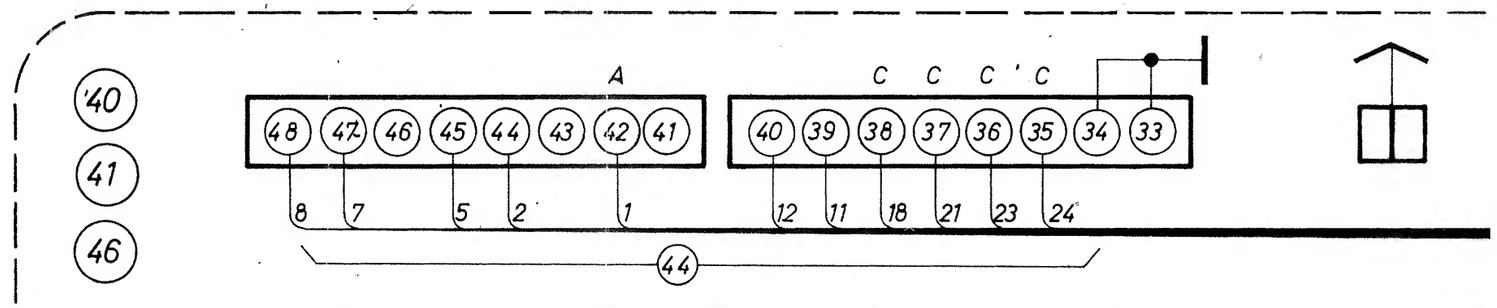
Verbindungsleitungen im Kabelbaum

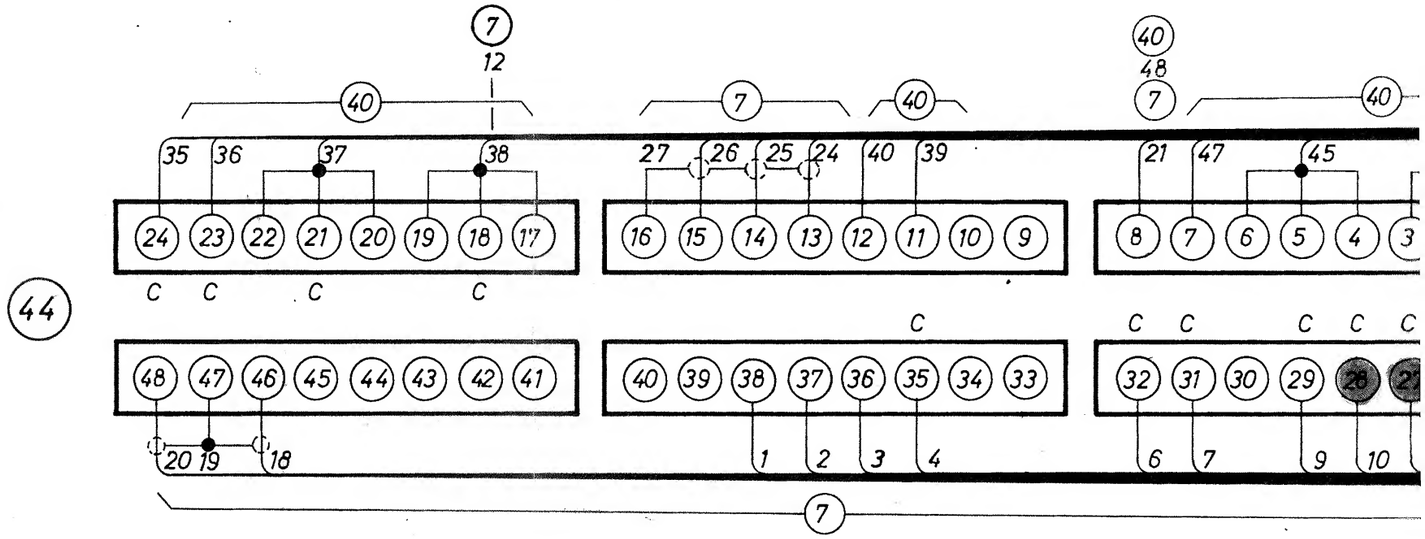
A = SY	1,0 mm ⌀	rt = Hochspannung	
B = FSUL	1,0 mm ⌀	bl = normale Leitung	
C = FUL	1,8 mm ⌀	ws = Heiz-u. Netzleitung	
D = FSUL(St)UL		gr = NF-Leitungen	

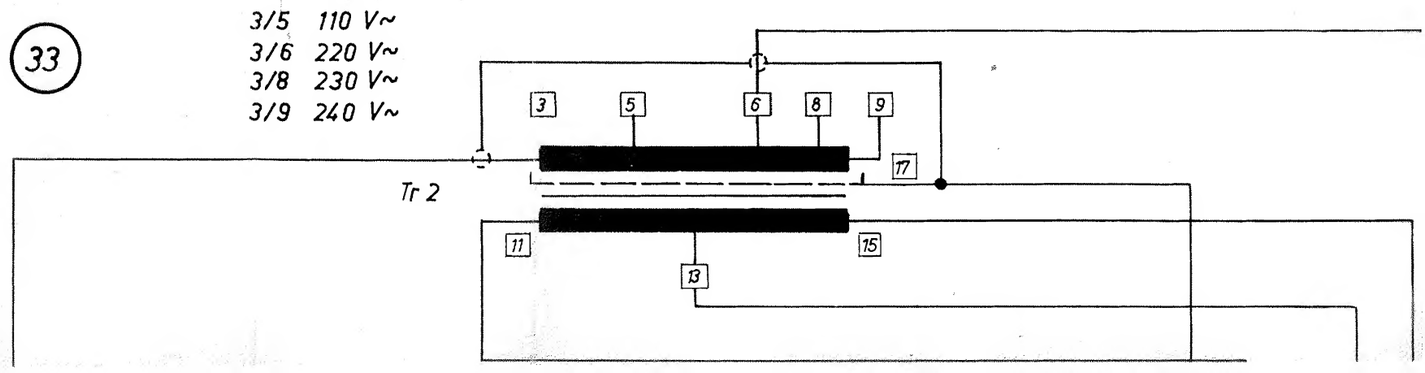
Leitungen nach B und D sind im Kabelbaum nicht besonders bezeichnet.

HAUPTANSCHLUSSKLEMMEN (7)

Klemme	
1	P1 FERNANLASSER
2	P2 FERNANLASSER
3	– BATTERIE
4, 5	220 V~ NOTUMFORMER
6	– BORDNETZ
7	P1 FERNANLASSER
8	frei
9	P2 FERNANLASSER
10, 11	220 V~ HAUPTUMFORMER (BORDNETZ 220 V~)
12, 13	12,6 V~ für AAZG 4
14	frei
15, 16	EMPF.-ANTENNE
17	frei
18	SPERRSPANNUNG
19	⊥ MASSE oder ERDE des EMPFÄNGERS
20	MITHÖRSPANNUNG
21, 22	MORSETASTE
23	frei
24	NF vom EMPFÄNGER für TELEFONHÖRER
25	TELEMIKROFONTASTE
26	MIKROFONEINGANG
27	KLINKENBUCHSE
28	frei
29, 30	220 V~ für EMPFÄNGER







1 A

L 11 (48 47 46 45 44 43 42 41) · L 12 (40 39 38 37 36 35 34 33) · L 13 (32 31 30 29 28 27 26 25)

5 6 · 30 29 · 15 16 · 20 19 18 · 27 · 24

7 · 7 · 7

33 35 33 · 44 · 33 40 39 38 · 33 · 44

5 6 16 15 14 13 8 48 47 46 47 48 18 27 28 29 31 32 35 36 37 38

C C C C C C

30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1

7

220 V~ für Empf.

Morse-taste

Mithörspg.

Sperrspg.

Empf.-Antenne

12,6 V~ für AAZG4

Notumformer EGW 7,5/2 24/220 V

Haupt-umformer

U V EA C DBF

U V EA C DBF

Batterie - +

Fernanlasser FAE 110/20-220/10

A C BD P2 P1 N P

Fernanlasser mit Einschaltrelais FA/Eb 24/24

A C BD P2 P1 N P

Bordnetz 110 oder 220 V-

— +

Tauchspul-Mikrofon

Taste Telemikrofon

d c a b

Klinkenbuchse

NF vom Empfänger

Gestellaufteilung

41 GS 104 K

NM 101 44 7

33 UE 12

Buchstabe	Buchst. kommt vor	Änderung	Tag	Name
Paßmaß				
ab. Abmaß				
u. Abmaß				

Maße ohne Toleranzang. nach: DIN 7168 mittel

Gewicht

Halbzeug

Werkstoff

	Tag	Name
Bearb.	14.1.66	K
Gepr		
Norm.		

HAGENUK KIEL

Benennung: Gestellverkabelung GS 104 K, NM 101 u. UE 12

Maßstab

Zeichnung Nr. 97.53 B 1280

Ersatz

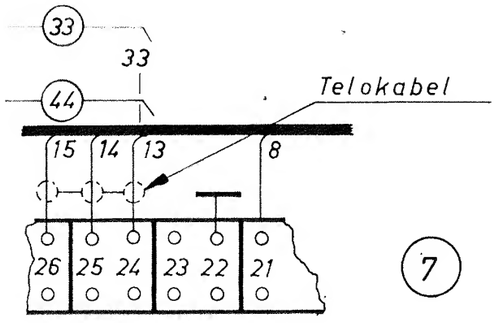
6 5 4

D C B A

UNTERGRUPPEN IM GESTELL

HAUPTANSCHLUSSLEISTE		(7)
NETZ - MODULATIONSTEIL	NM 101	(44)
SENDER	GS 101	(40)
SENDER	GS 102	(40)
SENDER	KS 101	(41)
SENDER	GS 104 K	(41)
SENDER	MS 101	(46)
EMPFÄNGER	UE 12	(33)

ABLESEBEISPIEL



Klemme 24 der Hauptanschlußleiste (7)
führt an Klemme 13 im Netz-Modulationsteil (44)
und an Klemme 33 im Empfänger (33)